

## CITGO Petroleum Corporation



P.O. Box 4689  
Houston, TX 77210-4689

CERTIFIED MAIL RETURN RECEIPT REQUESTED

7008 0500 0001 2119 6879

August 31, 2010

Chief  
Environmental Enforcement Section  
Environment and Natural Resources Division  
U.S. Department of Justice  
P.O. Box 7611, Ben Franklin Station  
Washington, DC 20044-7611  
Reference Case No. 90-5-2-1-07277

Re: Semi-Annual Report  
Report Covering Period January 1, 2010 – June 30, 2010  
CITGO Petroleum Corporation  
Civil Action Number H-04-3883  
Southern District of Texas, Consent Decree entered January 26, 2005

Dear Chief:

Pursuant to Section IX of the referenced Consent Decree, CITGO is submitting the Semi-Annual Report for the 1st half of 2010 for its Covered Refineries. The Covered Refineries include the Corpus Christi East Refinery, the Corpus Christi West Refinery, the Lake Charles Refinery, and the Lemont Refinery. The Paulsboro and Savannah Refineries are owned and operated by NuStar Asphalt Refining, LLC. Semi-annual reports for these facilities are submitted by CITGO Petroleum Corporation. This report covers the period from January 1, 2010 through June 30, 2010.

The Semi-Annual Report consists of individual reports for each of the Covered Refineries, and therefore six reports are enclosed. Each individual report consists of a spreadsheet listing each applicable Consent Decree topic, Paragraph reference, due date, submittal or completion date, a description of the requirement, and comments detailing compliance status. The spreadsheet also addresses the requirements of Paragraph 144, Section IX., and includes designation of the applicable section of Paragraph 144 for which the information is being reported. This designation appears in the report spreadsheet column labeled “¶ 144 Reporting (a. - e.)”. Attachments are also used to provide additional information.

A complete set of the six reports is being provided to EPA Headquarters. Copies of the appropriate individual refinery reports are being provided to the Applicable EPA Regions and Applicable State Agencies as described in Section XVII and additional requests from EPA and Illinois EPA.

I certify under penalty of law that this information was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my directions and my inquiry of the person(s) who manage the system, or

Chief, Environmental Enforcement Section

August 31, 2010

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the person(s) directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

If you have any questions, or require additional information, please contact me at 832-486-4903.

Sincerely,



David Hollis  
Manager Environmental Services

Enclosures

**Copies per Section XVII., Paragraph 270:**

**Covered Refineries**

Certified # 7008 0500 0001 2119 6404  
U.S. Environmental Protection Agency  
Director, Air Enforcement Division  
Office of Civil Enforcement  
Ariel Rios Building, Mail Code 2242-A  
1200 Pennsylvania Avenue, N.W.  
Washington, DC 20460-0001

Manager, Environmental Services  
CITGO  
1293 Eldridge Parkway  
Houston, TX 77077

General Counsel  
CITGO  
1293 Eldridge Parkway  
Houston, TX 77077

Matrix New World Engineering Inc. (*via email only*)  
Sharon Braby of EPA (*via email only*)

**Lake Charles Refinery**

Certified # 7008 0500 0001 2119 6411  
Chief  
Air, Toxics, and Inspections Coordination Branch  
Environmental Protection Agency, Region 6  
1445 Ross Avenue  
Dallas, TX 75202-2733

Certified # 7008 0500 0001 2119 6428  
Peggy M. Hatch  
Administrator, Enforcement Division  
Office of Environmental Compliance  
Louisiana Department of Environmental Quality  
P.O. Box 4312  
Baton Rouge, LA 70821-4312

**Lemont Refinery**

Certified # 7008 0500 0001 2119 6435  
Air and Radiation Division  
U.S. EPA, Region 5  
ATTN: Compliance Tracker  
77 West Jackson Blvd. (AE-17J)  
Chicago, IL 60602-3018

Certified # 7008 0500 0001 2119 6886  
Office of Regional Counsel  
U.S. EPA, Region 5  
77 West Jackson Blvd. (C-14J)  
Chicago, IL 60604

Certified # 7008 0500 0001 2119 6893  
Manager  
Air Compliance Unit  
Compliance and Enforcement Section (MC 40)  
Bureau of Air  
Illinois Environmental Protection Agency  
P.O. Box 19276  
Springfield, IL 62794-9276

Certified # 7008 0500 0001 2119 6909  
Manager  
Air Regional Field Office  
Division of Air Pollution Control  
Illinois Environmental Protection Agency  
9511 West Harrison  
Des Plaines, IL 60016

Certified # 7008 0500 0001 2119 6916  
Chief, Environmental Bureau  
Office of the Illinois Attorney General  
69 W. Washington St., Ste. 18  
Chicago, IL 60604



Certified # 7008 0500 0001 2119 6923  
Manager  
Permit Section (MC 11)  
Division of Air Pollution Control  
Illinois Environmental Protection Agency  
P.O. Box 19506  
Springfield, IL 62794-9506

**Corpus Christi East Refinery and Corpus Christi West Refinery**

Certified # 7008 0500 0001 2119 6442  
Chief  
Air, Toxics, and Inspections Coordination Branch  
Environmental Protection Agency, Region 6  
1445 Ross Avenue  
Dallas, TX 75202-2733

**Savannah Refinery**

Certified # 7008 0500 0001 2119 6459  
Chief, Air Enforcement & EPCRA Branch  
Air, Pesticides and Toxics Management Division  
U.S. Environmental Protection Agency, Region 4  
61 Forsyth Street, S.W.  
Atlanta, GA 30303



Certified # 7008 0500 0001 2119 6466  
Chief  
Air Protection Branch  
Environmental Protection Division  
4244 International Parkway, Suite 120  
Atlanta, GA 30354

**Paulsboro Refinery**

Certified # 7008 0500 0001 2119 6497  
Director, Division of Enforcement and Compliance Assistance  
U.S. Environmental Protection Agency, Region 2  
21<sup>st</sup> Floor  
290 Broadway  
New York, NY 10007

Certified # 7008 0500 0001 2119 6473  
Chief, Air Compliance Branch  
Division of Enforcement and Compliance Assistance  
21<sup>st</sup> Floor  
290 Broadway  
New York, NY 10007

Certified # 7008 0500 0001 2119 6510  
New Jersey Department of Environmental Protection  
Southern Regional Office  
Air Compliance & Enforcement Manager  
One Port Center  
2 Riverside Drive, Suite 201  
Camden, NJ 08103

bc:

Lee Liebendorfer – Lake Charles Report

Mark Cheesman – Corpus Christi Reports

Claude Harmon – Lemont Report

Janet Ferris – Paulsboro Report

Dusty Crisler – Savannah Report

Chris Newcomb- Legal

File: Semi-Annual Report, IX. 01-2010



**CITGO Petroleum Corporation**

**Lemont Refinery**

**Semi-Annual Report**

**January 1, 2010 – June 30, 2010**

Reference Case No. 90-5-2-1-07277

**CITGO Petroleum Corporation  
Lemont Refinery  
Semi-Annual Report  
January 1, 2010 – June 30, 2010**

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**CITGO Petroleum Corporation  
Lemont Refinery  
Semi-Annual Report  
July 1, 2009 – December 31, 2009**

**Executive Summary**

Pursuant to Section IX of the CITGO Petroleum Corporation Consent Decree (Civil Action Number H-04-3883 - Southern District of Texas) entered January 26, 2005, CITGO is submitting the Semi-Annual Report for the first half of 2010 for the Lemont Refinery in Lemont, Illinois. This report covers the period from January 1, 2010 through June 30, 2010.

The Semi-Annual Report consists of:

- A spreadsheet listing each applicable Consent Decree topic, Paragraph reference, due date, submittal or completion date, a description of the requirement, and comments detailing compliance status. The spreadsheet also addresses the requirements of Paragraph 144, Section IX, for each applicable Consent Decree paragraph and includes designation of the applicable section of Paragraph 144 for which the information is being reported. This designation appears in the report spreadsheet column labeled “¶ 144 Reporting (a – e).”
- A set of attachments that are used to provide additional information.



CITGO Petroleum Corporation  
Lemont Refinery  
Semi-Annual Report  
January 1, 2010 - June 30, 2010

Consent Decree Topic	Paragraph Reference	Due Date	Submittal/ Completion Date	Requirement Description	¶ 144 Reporting (a. - e.)	Comments
FCCU	12	Effective January 26, 2005	January 26, 2005 and Ongoing	Operate, calibrate and certify CEMS for NO <sub>x</sub> , O <sub>2</sub> , SO <sub>2</sub> , CO and opacity at FCCU. The CEMS shall be installed, calibrated and certified in accordance with 40 CFR 60.13 and Part 60 Appendices A and F, and the applicable performance specification test of 40 CFR Part 60 Appendix B.	a.	Complied with requirement.
FCCU	12	Effective December 31, 2007	December 31, 2007 and Ongoing	Operate, calibrate and certify PEMS for opacity at FCCU. The PEMS shall be operated, calibrated and certified in accordance with the approved alternative monitoring plan.	a.	Complied with requirement.
FCCU	12	Effective January 26, 2005	January 26, 2005 and Ongoing	For O <sub>2</sub> , SO <sub>2</sub> , NO <sub>x</sub> , and CO CEMS: In lieu of the requirements of 40 C.F.R. Part 60, Appendix F §§ 5.1.1, 5.1.3, and 5.1.4, may conduct: (1) either a Relative Accuracy Audit ("RAA") or a Relative Accuracy Test Audit ("RATA") once every three (3) years; and 2) a Cylinder Gas Audit ("CGA") each calendar quarter in which a RAA or RATA is not performed.	a.	Complied with requirement. CGA conducted each calendar quarter this reporting period.
FCCU	21	Effective December 31, 2007	December 31, 2007 and Ongoing	Convert the FCCU to full burn operation or accept and agree to comply with concentration based emission limit of 20 ppmvd on a 365-day rolling average and 40 ppmvd on a 7-day rolling average basis, both at 0% oxygen.	a.	Complied with Emission Limit Option at Paragraphs 30A; this explicitly absolves CITGO of any remaining obligations for the Lemont Refinery FCCU under Paragraphs 13 through 30 of the Consent Decree requirement.

Consent Decree Topic	Paragraph Reference	Due Date	Submittal/ Completion Date	Requirement Description	¶ 144 Reporting (a. - e.)	Comments
FCCU	31	Effective December 31, 2007	December 31, 2007 and Ongoing	Use NOx and O <sub>2</sub> CEMS to monitor performance and to report compliance.	a. & b.	Performance monitored. See <b>Attachment 1</b> .
FCCU	33	Effective December 31, 2007	December 31, 2007 and Ongoing	Install and commence operation of a Wet Gas Scrubber (WGS) to comply with a SO <sub>2</sub> emission limit of 25 ppmvd at 0% O <sub>2</sub> on a 365-day rolling average basis and 50 ppmvd at 0% O <sub>2</sub> on a 7-day rolling average basis.	a.	Complied with requirement.
FCCU	41	Effective January 26, 2005	January 26, 2005 and Ongoing	Use SO <sub>2</sub> and O <sub>2</sub> CEMS to monitor performance and to report compliance.	a. & b.	Performance monitored. See <b>Attachment 1</b> .
FCCU	44a	Effective December 31, 2007	December 31, 2007 and Ongoing	Install and commence operation of a WGS designed to achieve an emission limit of 0.5 pounds of PM per 1000 pounds of coke burned on a 3-hour average basis.	a. & b.	Complied with requirement.
FCCU	46	Effective December 31, 2007	December 31, 2007 and Ongoing	Comply with an emission limit of 1.0 pounds of PM per 1000 pounds of coke burned on a 3-hour average basis .	a., b. & d.	Complied with requirement based on the most recent completed Performance Test (April 2009). However, the 2010 Performance Test, which began June 30, indicates degradation in WGS performance. The WGS will be taken out of service as part of the FCCU turnaround in September 2010. A stack test will be performed once the FCCU and WGS are back in service.

Consent Decree Topic	Paragraph Reference	Due Date	Submittal/ Completion Date	Requirement Description	¶ 144 Reporting (a. - e.)	Comments
FCCU	47	March 31, 2008	March 18, 2008	Conduct annual PM stack tests.	a. & d.	Complied with requirement. Stack test completed June 30, 2010.
FCCU	48	Effective January 26, 2005	January 26, 2005 and Ongoing	Comply with 100ppmvd CO corrected to 0% O2 on a 365-day rolling average basis and 500ppmvd CO corrected to 0% O2 on a 1-hour average basis at FCCU.	a. & b.	Complied with requirement. See <b>Attachment 1</b> .
FCCU	50	Effective January 26, 2005	January 26, 2005 and Ongoing	Beginning on the dates set forth in Paragraph 12, shall use CO and O2 CEMS to monitor performance and report compliance with terms and conditions of Consent Decree.	a. & b.	Complied with requirement. See <b>Attachment 1</b> .
FCCU	51	Effective January 26, 2005	January 26, 2005 and Ongoing	FCCU Regenerator shall be an "affected facility" per NSPS Subparts A & J. Comply with requirements of NSPS Subparts A & J for CO on FCCU.	a., b. & d.	Complied with requirement. See <b>Attachment 1</b> .
FCCU	51	Effective December 31, 2007	December 31, 2007 and Ongoing	FCCU Regenerator shall be an "affected facility" per NSPS Subparts A & J. Comply with requirements of NSPS Subparts A & J for SO2 on FCCU.	a., b. & d.	Complied with requirement. See <b>Attachment 1</b> .

Consent Decree Topic	Paragraph Reference	Due Date	Submittal/ Completion Date	Requirement Description	¶ 144 Reporting (a. - e.)	Comments
FCCU	51	Effective December 31, 2007	December 31, 2007 and Ongoing	FCCU Regenerator shall be an "affected facility" per NSPS Subparts A & J. Comply with requirements of NSPS Subparts A & J for PM on FCCU.	a., b. & d.	Complied with requirement based on the most recent completed Performance Test (April 2009). However, the 2010 Performance Test, which began June 30, indicates degradation in WGS performance. The WGS will be taken out of service as part of the FCCU turnaround in September 2010. A stack test will be performed once the FCCU and WGS are back in service. See <b>Attachment 1</b> .
Heaters & Boilers	56	Initial submittal by March 31, 2005 and Annually thereafter by February 28 of each year	February 28, 2006 and by February 28 of each year thereafter	Shall submit a detailed NOx Control Plan ("Control Plan") to EPA for review and comment by no later than March 31, 2005, with annual updates (covering the prior calendar year) with the first report submitted pursuant to Section IX (Record-keeping and Reporting) following the passage of each calendar year until termination of the Consent Decree or until the reductions required by Paragraph 54 are achieved, whichever occurs first. The Control Plan and its updates shall describe the achieved and anticipated progress of the NOx emissions reductions program for heaters and boilers and shall contain the information requested in this Paragraph.	a.	A detailed NOx Control Plan is not applicable this reporting period. Therefore, <b>Attachment 2</b> is not attached.



Consent Decree Topic	Paragraph Reference	Due Date	Submittal/ Completion Date	Requirement Description	¶ 144 Reporting (a. - e.)	Comments
Heaters & Boilers	59	September 30, 2005	September 30, 2005 and Ongoing	By no later than September 30, 2005, CITGO shall implement the specified monitoring requirements (CEMS, PEMS, stack test) based on the capacity of the heaters or boiler as listed in Appendix C for units that utilize Qualifying Controls as of the Date of Lodging and which CITGO intends to use to achieve the NOx reductions required by Paragraph 54.	a.	Complied with requirement. Paragraph 59a requires the use of CEMS for heaters and boilers with a capacity greater than 150 mmBTU/hr.
Heaters & Boilers	60	September 30, 2005	September 30, 2005 and Ongoing	Shall install, certify, calibrate, maintain, and operate the CEMS required by Paragraph 59 in accordance with 40 C.F.R. Part 60, Appendices A and F, and the applicable performance specification test of 40 C.F.R. Part 60, Appendix B. However, in lieu of the requirements of 40 C.F.R. Part 60, Appendix F §§ 5.1.1, 5.1.3 and 5.1.4, CITGO may conduct either a Relative Accuracy Audit ("RAA") or a Relative Accuracy Test Audit ("RATA") once every three (3) years and shall conduct Cylinder Gas Audits ("CGA") each calendar quarter during which a RAA or a RATA is not performed.	a.	Complied with requirement. CGA conducted each calendar quarter this reporting period.
Heaters & Boilers	64a	Effective January 26, 2005	January 26, 2005 and Ongoing	Comply with NSPS requirements of Subparts A and J for fuel gas combustion devices except those listed in Appendix E of Consent Decree.	a., b., & d.	Complied with requirement except as noted in <b>Attachment 3</b> .
Heaters & Boilers	64a	Effective July 31, 2005	July 31, 2005 and Ongoing	Heaters and boilers listed in Appendix E shall be an "affected facility" and shall be subject to and comply with the requirements of NSPS Subparts A and J for fuel gas combustion devices by the dates listed in Appendix E.	a.	Complied with requirement.
Heaters & Boilers	64a	Effective October 31, 2005	October 31, 2005 and Ongoing	Heaters and boilers listed in Appendix E shall be an "affected facility" and shall be subject to and comply with the requirements of NSPS Subparts A and J for fuel gas combustion devices by the dates listed in Appendix E.	a.	Complied with requirement.



Consent Decree Topic	Paragraph Reference	Due Date	Submittal/ Completion Date	Requirement Description	¶ 144 Reporting (a. - e.)	Comments
Heaters & Boilers	65	Effective January 26, 2005	January 26, 2005 and Ongoing	Discontinue use of fuel oil in any combustion unit except for periods of Natural Gas Curtailment. Nothing herein is intended to limit, or shall be interpreted as limiting, the use of torch oil during FCCU Startups.	a. & d.	Complied with requirement.  Further, this paragraph is not intended to be interpreted to limit the use of torch oil in an FCCU regenerator to assist in starting, restarting, maintaining hot standby, or maintaining regenerator heat balance.
SRP	67b	Effective January 1, 2009	January 1, 2009 and Ongoing	NSPS Subparts A & J applicable to Claus Trains A and B.	a.	Complied with requirement.
SRP	67c	Effective January 26, 2005	January 26, 2005 and Ongoing	NSPS Subparts A & J applicable to Claus Trains C and D.	a.	Complied with requirement.
SRP	68a	Effective January 1, 2009	January 1, 2009 and Ongoing	Claus Trains A & B must comply with provisions applicable under NSPS Subparts A & J.	a., b. & e.	Complied with requirement.
SRP	68a	Effective January 26, 2005	January 26, 2005 and Ongoing	Claus Trains C & D must comply with provisions applicable under NSPS Subparts A & J.	a., b. & e.	Complied with requirement.
SRP	68b	Effective January 1, 2009	January 1, 2009 and Ongoing	Monitor all tail gas emission points (stacks) and report excess emissions from each SRP pursuant to 40 CFR 60.7(c), 60.13 and 60.105(a)(6). Trains A & B.	a. & b.	Complied with requirement except as noted in <b>Attachment 4.</b>
SRP	68b	Effective January 26, 2005	January 26, 2005 and Ongoing	Monitor all tail gas emission points (stacks) and report excess emissions from each SRP pursuant to 40 CFR 60.7(c), 60.13 and 60.105(a)(6). Trains C & D.	a. & b.	Complied with requirement except as noted in <b>Attachment 4.</b>

Consent Decree Topic	Paragraph Reference	Due Date	Submittal/ Completion Date	Requirement Description	¶ 144 Reporting (a. - e.)	Comments
SRP	69a	Effective January 1, 2009	January 1, 2009 and Ongoing	Install one or more TGU(s) to control emissions from Claus Trains 119 A and B.	a.	Complied with requirement.
SRP	73a	February 28, 2005	February 28, 2005 and Ongoing	Summarize and report changes to the Preventative Maintenance and Operaton Plan (PMO) in semi-annual report.	a. & e.	Complied with requirement. See <b>Attachment 5</b> for summary of changes.
HC Flaring	74	Effective January 26, 2005	January 26, 2005 and Ongoing	Implement good air pollution control practices to minimize emissions from flare devices.	a.	Complied with requirement.
HC Flaring	75a.i.	Effective January 26, 2005	Effective January 26, 2005	Flares 844C-1, 844C-2, 844C-3 and 844C-4 must meet requirements of NSPS Subparts A & J by option (i) operating and maintaining a flare gas recovery system to prevent continuous or routine combustion in the NSPS HC flaring device.	a.	Flares 844C-1, 844C-2, 844C-3, and 844C-4 are equipped with flare gas recovery systems. The systems were operated throughout the reporting period.
AG Flaring/Tail Gas Incident	78	Effective January 26, 2005	January 26, 2005 and Ongoing	Investigate Acid Gas Flaring and Tail Gas Incidents, correct conditions that caused incident, and minimize incidents.	a.	No Acid Gas Incident occurred during reporting period. One Tail Gas Incident occurred during reporting period.
AG/TG Flaring	79	45 days following the end of an acid gas flaring incident	N/A	No later than 45 days following the end of an Acid Gas Flaring Incident, an investigative report shall be submitted.	a.	No Acid Gas Incident occurred during reporting period.
AG Flaring/Tail Gas Incident	79	45 days following the end of a Tail Gas Incident	June 15, 2010	No later than 45 days following the end of a Tail Gas Incident, an investigative report shall be submitted.	a.	Tail Gas Incident occurred April 29, 2010. Report submitted June 15, 2010.

CITGO Petroleum Corporation  
Lemont Refinery  
Semi-Annual Report  
January 1, 2010 - June 30, 2010

Consent Decree Topic	Paragraph Reference	Due Date	Submittal/ Completion Date	Requirement Description	¶ 144 Reporting (a. - e.)	Comments
AG Flaring/Tail Gas Incident	80a	Effective January 26, 2005	N/A	Take corrective actions to minimize likelihood of a recurrence of the Root Cause and all significant contributing causes of AG Flaring Incident.	a.	No Acid Gas Incidents occurred during reporting period.
AG Flaring/Tail Gas Incident	80a	Effective January 26, 2005	N/A	Take corrective actions to minimize likelihood of a recurrence of the Root Cause and all significant contributing causes of Tail Gas Incident.	a.	Corrective action taken and electrical evaluations ongoing.
AG Flaring/Tail Gas Incident	80b	Effective January 26, 2005	N/A	If EPA does not notify CITGO in writing within 45 days of receipt of reports required by Paragraph 79 that it objects to proposed corrective actions and schedules, then those actions and schedules shall be deemed acceptable for compliance with Paragraph 80a.	a.	No Acid Gas Incidents occurred during reporting period.
AG Flaring/Tail Gas Incident	80b	Effective January 26, 2005	N/A	If EPA does not notify CITGO in writing within 45 days of receipt of reports required by Paragraph 79 that it objects to proposed corrective actions and schedules, then those actions and schedules shall be deemed acceptable for compliance with Paragraph 80a.	a.	No written reply received from EPA concerning Tail Gas Incident.
AG Flaring/Tail Gas Incident	80c.	Effective January 26, 2005	N/A	If EPA objects to the proposed corrective actions and/or schedule of implementation, it shall notify CITGO and explain basis, and CITGO shall respond promptly to EPA's objection.	a.	No Acid Gas Incidents occurred during reporting period.
AG Flaring/Tail Gas Incident	80c.	Effective January 26, 2005	N/A	If EPA objects to the proposed corrective actions and/or schedule of implementation, it shall notify CITGO and explain basis, and CITGO shall respond promptly to EPA's objection.	a.	No written reply received from EPA objecting to the proposed corrective actions.



CITGO Petroleum Corporation  
Lemont Refinery  
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Consent Decree Topic	Paragraph Reference	Due Date	Submittal/ Completion Date	Requirement Description	¶ 144 Reporting (a. - e.)	Comments
AG/TG Flaring	93a	Effective January 26, 2005	N/A	For Tail Gas Incidents, CITGO shall follow the same investigative, reporting, corrective action and assessment of stipulated penalty procedures as those set forth in Paragraphs 79 through 91 for Acid Gas Flaring Incidents. No later than 45 days following the end of a Tail Gas Incident, an investigative report shall be submitted.	a.	Complied with requirement.
HC Flaring	94	Effective January 26, 2005	Each Semi-Annual Report	Hydrocarbon Flaring Incidents shall be investigated, reported, and corrective action taken, according to paragraphs 79 - 80 with certain exceptions. Investigative report to be completed within 45 days following incident. Investigative report to be submitted as part of Semi-Annual Report.	a. & e.	Hydrocarbon incidents occurred April 3, 2010, April 29, 2010, May 23, 2010 and June 18, 2010. See <b>Attachment 6</b> .
BWON	96a	Effective January 26, 2005	January 26, 2005 and	Comply with 6BQ Compliance Option.	a.	Complied with requirement. YTD BQ is below 6 Mg.
BWON	101a	Effective January 26, 2005	January 26, 2005 and Ongoing	Continue to use primary and secondary carbon canisters as control device under Benzene Waste NESHAP and operate them in series where such systems are in use as of January 26, 2005. Maintain a complete, accurate and up to date list which includes location of the canisters and whether VOC or benzene is used to monitor for breakthrough.	a.	Complied with requirement.
BWON	101b	Effective January 26, 2005	January 26, 2005 and Ongoing	For carbon canisters, do not use single carbon canisters for any new units or installations requiring controls.	a.	Complied with requirement.
BWON	101c	Effective January 26, 2005	January 26, 2005 and Ongoing	For dual carbon canister systems, breakthrough between the primary and secondary canister is equal to or greater than 50 ppm volatile organic compounds (VOC).	a.	Complied with requirement.

Consent Decree Topic	Paragraph Reference	Due Date	Submittal/ Completion Date	Requirement Description	¶ 144 Reporting (a. - e.)	Comments
BWON	101d	Effective January 26, 2005	January 26, 2005 and Ongoing	Monitor for breakthrough between the primary and secondary carbon canisters monthly.	a.	Complied with requirement.
BWON	101e	Effective January 26, 2005	January 26, 2005 and Ongoing	The original carbon canister shall be replaced immediately when breakthrough is detected between the primary and secondary canister. Immediately means within twelve hours for canisters 55 gallons and less and within twenty four hours for canisters greater than 55 gallons.	a.	Complied with requirement.
BWON	101f	October 31, 2004	N/A	Monitor for breakthrough on temporary carbon canisters each day canister is in use.	a.	No temporary applications used during period.
BWON	101g	Effective January 26, 2005	January 26, 2005 and Ongoing	Maintain a readily available supply of fresh carbon canisters to implement "immediate" change-out when breakthrough occurs.	a.	Complied with requirement.
BWON	101h	Effective January 26, 2005	January 26, 2005 and Ongoing	Maintain records for carbon canisters, which includes monitor readings and constituents being monitored for at least five years.	a.	Complied with requirement. Records maintained in LDAR database.
BWON	102	May 31, 2005	May 31, 2005 and Ongoing	Establish or modify a written management of change procedure to provide for annual review of process information relating BWON waste streams.	a.	Complied with requirement.
BWON	102	Effective May 31, 2005	May 31, 2005 and Annually, thereafter	Per BWON Management of Change Procedures, conduct an annual review of process information, including construction projects, to locate new benzene waste streams for inclusion into the waste stream inventory.	a.	Complied with requirement.
BWON	103a	Effective September 30, 2005	September 30, 2005 and ongoing	Conduct initial audits of laboratories that perform analyses of BWON samples.	a.	No initial laboratory audits conducted this reporting period.



Consent Decree Topic	Paragraph Reference	Due Date	Submittal/ Completion Date	Requirement Description	¶ 144 Reporting (a. - e.)	Comments
BWON	103c	Effective September 30, 2007	September 30, 2007 and ongoing	Conduct subsequent audits of laboratories that perform analyses of BWON samples such that each laboratory is audited every two years.	a.	No laboratory audits conducted this reporting period.
BWON	104	Effective January 26, 2005	September, 2005 and every 2 yrs thereafter	Review all spills to determine if any benzene waste was generated. Any release of more than 10 pounds in a 24 hour period shall be included in the TAB and BQ.	a.	Complied with requirement.
BWON	105a	Effective May 31, 2005	N/A	Develop and begin implementation of annual training for employees who draw benzene waste samples for BWON purposes.	a.	No refinery employees are involved in drawing benzene waste samples for BWON purposes.
BWON	105b	Effective December 31, 2005	December 31, 2005 and Ongoing	Shall complete an initial training program on the standard operating procedures for all control devices and treatment processes used to comply with the Benzene Waste NESHAP for all operators assigned to applicable control devices and treatment processes.  Comparable training shall also be provided to any persons who subsequently become operators, prior to their assumption of this duty.	a.	Complied with requirement.
BWON	105d	May 31, 2005	May 31, 2005 and Ongoing	CITGO shall assure that the employees of any contractors hired to perform any of the requirements of Section V.L of this Consent Decree (i.e., Benzene Waste NESHAP Program Enhancements) are properly trained to implement such requirements that they are hired to perform, as under Paragraph 105.a and b above.	a.	Complied with requirement. See explanations in Paragraph 112b.

Consent Decree Topic	Paragraph Reference	Due Date	Submittal/ Completion Date	Requirement Description	¶ 144 Reporting (a. - e.)	Comments
BWON	107c	4th Quarter 2005	4th Quarter 2005 and Ongoing	Begin sampling under the EOL plan.	a.	Complied with requirement.
BWON	109	To be initiated in 4th Quarter 2005	Initiated in 4th Quarter 2005 and Ongoing	At the end of the calendar quarter following commencement of quarterly sampling, calculate a quarterly uncontrolled benzene quantity and estimate a projected calendar year uncontrolled benzene quantity based on quarterly EOL sampling results, non-EOL sampling results and approved flow calculations.	a.	Complied with requirement. Based on 1st, 2ndQ EOL sampling, BQ estimate for 2010 is 1.94 MT.
BWON	111d	Effective January 26, 2005	Effective January 26, 2005	Conduct quarterly monitoring and repair of the oil water separators .	a.	Complied with requirement.
BWON	112a	Effective Semi-annually after initial audit	Semi-Annually	Submit to EPA information in the progress report(s) pursuant to Paragraph 144 for the six month period covered by the report. An identification of all laboratory audits, if any, completed during the six month period, including a description of the methods used in the audit and the results of the audit.	a. & e.	No laboratory audits for the BWON program were performed during this reporting period.
BWON	112b	Effective May 31, 2005	May 31, 2005 and Semi-annually, thereafter	Submit to EPA information in the progress report(s) pursuant to Paragraph 144 for the six month period covered by the report: A description of the measures taken, if any, during the six month period to comply with the training provisions of Paragraph 105.  Paragraph 105a states: Provide annual (i.e., once each calendar year) training for all employees who draw benzene waste samples for Benzene Waste NESHAP purposes.	a. & e.	Employees do not draw samples for BWON purposes.

Consent Decree Topic	Paragraph Reference	Due Date	Submittal/ Completion Date	Requirement Description	¶ 144 Reporting (a. - e.)	Comments
BWON	112b	Effective December 31, 2005 (See Paragraph 105b)	Semi-Annually	<p>Submit to EPA information in the progress report(s) pursuant to Paragraph 144 for the six month period covered by the report: A description of the measures taken, if any, during the six month period to comply with the training provisions of Paragraph 105.</p> <p>Paragraph 105b states: Shall complete an initial training program on the standard operating procedures for all control devices and treatment processes used to comply with the Benzene Waste NESHAP for all operators assigned to applicable control devices and treatment processes.</p> <p>Comparable training shall also be provided to any persons who subsequently become operators, prior to their assumption of this duty.</p>	a. & e.	Complied with requirement.
BWON	112b	Effective December 31, 2005	Semi-Annually	<p>Submit to EPA information in the progress report(s) pursuant to Paragraph 144 for the six month period covered by the report: A description of the measures taken, if any, during the six month period to comply with the training provisions of Paragraph 105.</p> <p>Paragraph 105 d states: CITGO shall assure that the employees of any contractors hired to perform any of the requirements of Section V.L of this Consent Decree (i.e., Benzene Waste NESHAP Program Enhancements) are properly trained to implement such requirements that they are hired to perform, as under Paragraph 105.a and b above.</p>	a. & e.	No contractor training was performed during this reporting period.



Consent Decree Topic	Paragraph Reference	Due Date	Submittal/ Completion Date	Requirement Description	¶ 144 Reporting (a. - e.)	Comments
BWON	112c	Effective January 26, 2005	Semi-Annually	Submit to EPA information in the progress report(s) pursuant to Paragraph 144 for the six month period covered by the report: A summary of the sampling results required under Paragraphs 107, including the quarterly and projected annual uncontrolled benzene quantities or TABs, as applicable.	a. & e.	1st & 2nd Q BWON EOL calculations performed. See <b>Attachment 7</b> .
LDAR	115	Effective April 30, 2005	Semi-Annually	Develop and maintain a written program for compliance with applicable federal and state LDAR regulations.	a.	Complied with requirement.
LDAR	116a	May 31, 2005	May 31, 2005 and Ongoing	For personnel newly-assigned to LDAR responsibilities, require training prior to each employee beginning such work.	a.	Complied with requirement.
LDAR	116b	September 30, 2005	September 30, 2005 and Ongoing	Complete required initial annual training for all personnel assigned LDAR responsibilities.	a.	Complied with requirement.
LDAR	116b	Effective September 30, 2005	September 30, 2005 and Annually thereafter	For all personnel assigned LDAR responsibilities, shall provide and require completion of annual LDAR training.	a.	Complied with requirement. System in place for next required annual training.
LDAR	116c	September 30, 2005	September 30, 2005 and Ongoing	Complete required initial annual training for all other operations and maintenance personnel (including contract personnel) that includes instruction on aspects of LDAR that are relevant to the person's duties.	a.	Complied with requirement.
LDAR	116c	Effective September 30, 2005	September 30, 2005 and Annually thereafter	For all other operations and maintenance personnel (including contract personnel), shall provide and require completion of annual "Refresher" training that includes instruction on aspects of LDAR that are relevant to the person's duties.	a.	Complied with requirement. Training conducted throughout the year.

Consent Decree Topic	Paragraph Reference	Due Date	Submittal/ Completion Date	Requirement Description	¶ 144 Reporting (a. - e.)	Comments
LDAR	116d	Effective September 30, 2005	September 30, 2005 and Annually thereafter	CITGO shall assure that contract employees that perform LDAR work comply with annual LDAR training requirements of Paragraph 116. a.-c.	a.	Complied with requirement.
LDAR	116d for 116a	Effective May 31, 2005	May 31, 2005 and Ongoing	For contract employees performing LDAR work, shall assure that contractor complies with Subparagraph 116.a by requiring contractor to provide training for personnel newly assigned to LDAR responsibilities. Training to be completed prior to beginning such work. Contractor shall provide its training information and records to CITGO.	a.	Complied with requirement. Training conducted throughout the year.
LDAR	116d for 116b	September 30, 2005	September 30, 2005 and Ongoing	For contract employees performing LDAR work, shall assure that contractor complies with the training requirements in Subparagraphs 116.b by completing required initial annual training for all personnel assigned LDAR responsibilities. Contractor shall provide its training information and records to CITGO.	a.	Complied with requirement.
LDAR	116d for 116b	Effective September 30, 2005	September 30, 2005 and Annually thereafter	For contract employees performing LDAR work, shall assure that contractor complies with the training requirements in Subparagraphs 116.b by requiring contractor to provide annual training for all personnel assigned LDAR responsibilities. Contractor shall provide its training information and records to CITGO.	a.	Complied with requirement. System in place to meet ongoing requirement.



Consent Decree Topic	Paragraph Reference	Due Date	Submittal/ Completion Date	Requirement Description	¶ 144 Reporting (a. - e.)	Comments
LDAR	116d for 116c	September 30, 2005	September 30, 2005 and Ongoing	For contract employees performing LDAR work, shall assure that contractor complies with the training requirements in Subparagraphs 116.c by completing required initial annual training for all other contract operations and maintenance personnel that includes instruction on aspects of LDAR that are relevant to the person's duties. Contractor shall provide its training information and records to CITGO.	a.	Complied with requirement.
LDAR	116d for 116c	Effective September 30, 2005	September 30, 2005 and Annually thereafter	For contract employees performing LDAR work, shall assure that contractor complies with the training requirements in Subparagraphs 116.c by requiring contractor to provide annual 'refresher' training for all other contract operations and maintenance personnel that includes instruction on aspects of LDAR that are relevant to the person's duties. Contractor shall provide its training information and records to CITGO.	a.	Complied with requirement. System in place to meet ongoing requirement.
LDAR	117	September 30, 2005	September, 2005 and every two years thereafter	Conduct an audit to ensure compliance with all applicable LDAR requirements.		No LDAR audits completed during this reporting period.
LDAR	118	Initially in semi-annual report post September 30, 2005 and semi-annually thereafter	February 28, 2007 and semi-annually thereafter	Submit a summary, including findings, of the audit report and a list of corrective actions taken during the reporting period.	a. & e.	Complied with requirement. <b>See Attachment 9, Appendix F</b> for requested information.

Consent Decree Topic	Paragraph Reference	Due Date	Submittal/ Completion Date	Requirement Description	¶ 144 Reporting (a. - e.)	Comments
LDAR	118	Ongoing after November 29, 2005	Ongoing	If the results of any of the audits conducted pursuant to Paragraph 117 identify any areas of noncompliance, CITGO shall implement, as soon as practicable, all steps necessary to correct or otherwise address such area(s) of non-compliance and to prevent a recurrence of the cause of that non-compliance, to the extent practicable.	a.	Complied with requirement. <b>See Attachment 9, Appendix F</b> for requested information.
LDAR	118	Ongoing after November 29, 2005	Ongoing	For the life of the Consent Decree, CITGO shall retain the audit reports generated pursuant to Paragraph 117 and shall maintain a written record of all corrective actions that CITGO takes in response to deficiencies identified in any audits.	a.	Complied with requirement.
LDAR	119a	February 28, 2006	February 28, 2006 and Ongoing	Utilize an internal leak threshold of 500 ppm VOCs for valves. Excludes pressure relief valves.	a.	Complied with requirement.
LDAR	119b	February 28, 2006	February 28, 2006 and Ongoing	Utilize an internal leak threshold of 2000 ppm VOCs for pumps.	a.	Complied with requirement.
LDAR	120a	February 28, 2006	February 28, 2006 and Ongoing	For regulatory purposes, CITGO may continue to report leak rates in valves and pumps against the applicable regulatory leak definition, or may use the lower, internal leak definitions specified in Paragraph 119.	a.	For regulatory purposes, leak rates against the applicable regulatory leak definition are reported.
LDAR	120b	February 28, 2006	February 28, 2006 and Ongoing	Begin recording, tracking, repairing and re-monitoring all leaks in excess of the internal leak definitions of Paragraph 119 at such time as those definitions become applicable. Make a first attempt to repair and re-monitor leaks within five (5) days of identification. Within thirty (30) days of identification, shall either complete repairs and re-monitoring of leaks or place such component on the delay of repair list pursuant to Paragraph 128.	a. & d.	Complied with requirement except as reported in 130b.ix in <b>Attachment 8</b> .

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Consent Decree Topic	Paragraph Reference	Due Date	Submittal/ Completion Date	Requirement Description	¶ 144 Reporting (a. - e.)	Comments
LDAR	121a	February 28, 2006	February 28, 2006 and Ongoing	Monitor pumps at the internal leak threshold monthly.	a.	Complied with requirement.
LDAR	121b	February 28, 2006	February 28, 2006 and Ongoing	Monitor valves at the internal leak threshold quarterly.	a.	Complied with requirement.
LDAR	122	September 30, 2005	September 30, 2005 and Ongoing	Make an "initial attempt" to repair valves with a reading greater than 200ppm of VOCs. The "initial attempt" at repair and remonitoring must be conducted within 5 days of identification.	a.&d.	Complied with requirement except as reported per 130b.viii. In <b>Attachment 8</b> .
LDAR	123a	Effective January 26, 2005	January 26, 2005 and Ongoing	Continue to maintain an electronic database for storing and reporting LDAR data.	a.	Complied with requirement.
LDAR	123b	Effective December 31, 2004	December 31, 2004 and Ongoing	Use data loggers and/or other electronic data collection devices during all LDAR monitoring and use best efforts to transfer data daily. Some use of paper logs is allowed provided manually recorded monitoring data is transferred to the electronic data base within 7 days of the monitoring event.	a.	Complied with requirement.
LDAR	124 Subparag. a.	Effective January 26, 2005	January 26, 2005 and Ongoing	Shall have developed and begun implementing procedures for quality assurance/quality control ("QA/QC") reviews of all data generated by LDAR monitoring technicians such that monitoring data is reviewed for QA/QC by the monitoring technicians daily after collection.	a.	Complied with requirement.



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LDAR	124 Subparag. b.	Effective January 26, 2005	Quarterly January 26, 2005 and Ongoing	Shall have developed and begun implementing procedures for quality assurance/quality control ("QA/QC") reviews of all data generated by LDAR monitoring technicians such that all monitoring data is subject to a QA/QC review at least once per quarter, including but not limited to the number of components monitored per technician, time between monitoring events, and abnormal data patterns.	a.	Complied with requirement.
LDAR	127a	Effective January 26, 2005	January 26, 2005 and Ongoing	Conduct calibrations of LDAR monitoring equipment as outlined in Test Method 21.	a.	Complied with requirement.
LDAR	127b	Effective January 26, 2005	January 26, 2005 and Ongoing	Conduct calibration drift assessment at the end of each monitoring shift.	a.	Complied with requirement.
LDAR	127c	Effective January 26, 2005	January 26, 2005 and Ongoing	Maintain records of instrument calibrations for a period of one year following the date of calibration.	a.	Complied with requirement.
LDAR	128a	February 28, 2006	February 28, 2006 and Ongoing	Delay of repair list requires unit supervision sign-off within 30 days of identifying that a piece of equipment is leaking greater than the applicable leak definition and such equipment is technically infeasible to repair without process unit shutdown.	a.	Complied with requirement.
LDAR	128b	February 28, 2006	February 28, 2006 and Ongoing	Include equipment, placed on "delay of repair," on regular LDAR monitoring as required by Paragraph 121.	a.	Complied with requirement.

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Consent Decree Topic	Paragraph Reference	Due Date	Submittal/ Completion Date	Requirement Description	¶ 144 Reporting (a. - e.)	Comments
LDAR	128c	February 28, 2006	February 28, 2006 and Ongoing	Use "drill and tap" method, other than on a control or pressure relief valve, if it is leaking at a rate of 10,000 ppm or greater, unless it can be demonstrated that there is a safety, mechanical or major environmental concern posed by repairing the leak in this manner. If necessary, perform two "drill and taps" within 30 days of detecting the leak.	a.	Complied with requirement.
LDAR	128d	February 28, 2006	February 28, 2006 and Ongoing	Use best efforts to isolate and repair pumps identified as leaking at a rate of 2,000 ppm or greater.	a.	Complied with requirement.
LDAR	128e	Effective February 28, 2006	February 28, 2006 and Ongoing	Shall take the following actions for any equipment at the Refinery that CITGO intends to place on the "delay of repair" list, under applicable regulations: If a new method develops that is similarly effective as the "drill and tap" method for repairing non-control valves, CITGO will advise EPA and IEPA prior to implementating such new methods.	a.	Complied with requirement. No new methods developed during this reporting period.
LDAR	129	Four quarters after February 28, 2006		Replace, repack, or perform similarly effective repairs on chronically leaking, non-control valves during the next process turnaround after identification.		Complied with requirement.
LDAR	130a.ii.	Semi-Annual Report after February 28, 2006 [August 31, 2006]	February 28, 2006 and Ongoing	Include the following information in the Semi-Annual Progress Report: Notification that the lower leak definitions and increased monitoring frequencies have been implemented according to Paragraphs 119 and 121.	a. & e.	Complied with requirement.  The lower leak definitions and increased monitoring frequencies have been implemented according to Paragraphs 119 and 121.

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Consent Decree Topic	Paragraph Reference	Due Date	Submittal/ Completion Date	Requirement Description	¶ 144 Reporting (a. - e.)	Comments
LDAR	130a.viii.	Semi-Annual Report after February 28, 2006 [August 31, 2006]	February 28, 2006 and Ongoing	Shall include the following information in the Semi-Annual Progress Report: Notification that the "delay of repair" procedures under Paragraph 128 have been implemented.	a. & e.	Complied with requirement.  The "delay of repair" procedures under Paragraph 128 have been implemented.
LDAR	130b.i. thru 130b.vi.	Each Semi-Annual Report	February 28, 2010	In each Semi-Annual Progress Report, shall also include the following information: a list of the process units monitored during the reporting period; the number of valves and pumps present in each process unit; the number of valves and pumps monitored in each process unit; the number of valves and pumps found leaking; the number of "difficult to monitor" pieces of equipment monitored; the projected month and year of the next monitoring event for that unit.	a. & e.	Complied with requirement. <b>See Attachment 9 for summary of 130(b)(i) to (vi). See Attachment 9, Appendix A for DTM equipment. See Attachment 9, Appendix B for Monitoring Schedule 130(b)(vi).</b>
LDAR	130.b.vii.	Each Semi-Annual Report after February 28, 2006 [8/31/2006]	February 28, 2010	In each Semi-Annual Progress Report, a list of all equipment currently on the "delay of repair" list, the date each component was determined to be leaking at a rate greater than 10,000 ppm, the date of each drill and tap or equivalent method of repair, the associated monitoring results, and whether such activities were completed in a timely manner under Paragraph 128.	a. & e.	Complied with requirement. <b>See Attachment 9, Appendices C</b> for requested information.
LDAR	130.b.viii	Each Semi-Annual Report after September 30, 2005 [2/28/2006]	February 28, 2010	In each Semi-Annual Progress Report, shall also include the following information: the number, date and results of each initial attempt at repair, including a list of all initial attempts/remonitoring that did not occur in a timely manner under Paragraph 122.	a. & e.	Complied with requirement. <b>See Attachment 9, Appendix D</b> for requested information.



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Consent Decree Topic	Paragraph Reference	Due Date	Submittal/ Completion Date	Requirement Description	¶ 144 Reporting (a. - e.)	Comments
LDAR	130.b.ix	Each Semi-Annual Report after February 28, 2006 [ 8/31/2006]	February 28, 2010	In each Semi-Annual Progress Report, shall also include all instances of failure to comply with the requirements in Paragraph 120b.	a. & e.	Complied with requirement. <b>See Attachment 9, Appendix E</b> for requested information.
Permitting	132	Varies	As Applicable	Within thirty (30) days after the effective date or establishment of any emission limits and/or standards under Section V of this Consent Decree, shall submit applications to the IEPA to incorporate those emission limitations and/or standards into air permits (other than Title V permits) which are federally enforceable unless such permits with such limits have already been issued or applied for. Shall file any applications necessary to incorporate the requirements of those permits into the Title V permits of the Refinery.	a.	Complied with requirement.
Recordkeeping and Reporting	144b	Each Semi-Annual Report	Ongoing	Submit a summary of the emissions data, including a separate identification of any exceedance(s), as required by Section V, for the six (6) month period covered by the report.	b.	Complied with requirement. <b>See Attachment 10</b> for requested information.
Recordkeeping and Reporting	144c	Each Semi-Annual Report	February 28, 2010	Submit a description of any problems anticipated with respect to meeting the requirements of Section V of this Consent Decree.	c.	No problems anticipated with meeting requirements.

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**Attachment 1**

**FCCU CO, NO<sub>x</sub> and SO<sub>2</sub> CEM Exceedences**



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**ATTACHMENT 1**

**FCCU CO, NO<sub>x</sub> and SO<sub>2</sub> CEM Exceedances**

**Background**

The Lemont Refinery's FCCU began operating its Wet Gas Scrubber on October 21, 2007 and its Selective Catalytic Reduction (SCR) unit on December 7, 2007. The Lemont Refinery monitors its FCCU using Continuous Emission Monitoring System (CEMS) CO, NO<sub>x</sub>, SO<sub>2</sub>, and O<sub>2</sub> analyzers. New CEMs were installed as a part of the overall project; the new analyzers underwent a relative accuracy test audit (RATA) on April 17, 2008. The CO CEM (CO + O<sub>2</sub>) has undergone subsequent RATAs on April 29, 2009 and July 1, 2010. The NO<sub>x</sub> and SO<sub>2</sub> CEMs (NO<sub>x</sub> + O<sub>2</sub>) and SO<sub>2</sub> + O<sub>2</sub>) also underwent RATAs on July 1, 2010.

Non-maintenance related deviations of relevant standards are summarized below. These include evaluations against:

CO (12A-6961): hourly and daily rolling 365-day average standards (500 and 100 ppmv, respectively),  
NO<sub>x</sub> (12A-6964): daily rolling 7-day and 365-day average standards (40 and 20 ppmv, respectively), and  
SO<sub>2</sub> (12A-6963): daily rolling 7-day and 365-day average standards (50 and 25 ppmv, respectively).

All are corrected to 0% O<sub>2</sub>.

**Duration of CO Exceedances**

- a) The NSPS standard of 500ppmvd CO, corrected to 0% O<sub>2</sub>, was exceeded on a 1-hr average as summarized below:

Source	Analyzer	Number of hours exceeding standard on 1-hr average basis		
		1 <sup>st</sup> Quarter	2 <sup>nd</sup> Quarter	Total
FCCU, 112C-1	12A-6961R	4	8	12

- b) The 1-hr rolling average CO NSPS standard was exceeded as shown below:

Start	Readings (ppmv), by hour, during periods of excess hourly average
3/19/2010 05:00	775
3/19/2010 06:00	864
3/19/2010 07:00	842
3/19/2010 08:00	887
5/23/2010 15:00	572
5/23/2010 16:00	747
5/23/2010 18:00	729
5/23/2010 19:00	905
5/23/2010 20:00	862
5/23/2010 21:00	691

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<b>Start</b>	<b>Readings (ppmv), by hour, during periods of excess hourly average</b>
6/3/2010 14:00	660
6/3/2010 15:00	739
<b>Total hours excess for Period</b>	<b>8</b>
Total hours excess – 1 <sup>st</sup> Quarter	4
Total hours excess – 2 <sup>nd</sup> Quarter	8
Hours of Operation 1 <sup>st</sup> Quarter	2157.80
Hours of Operation 2 <sup>nd</sup> Quarter	2181.53
Hours of Operation, Reporting Period	4339.33
% Excess 1 <sup>st</sup> Quarter	0.19%
% Excess 2 <sup>nd</sup> Quarter	0.37%
% Excess for Reporting Period	0.28%

c) The CO 365-day rolling average was exceeded:

<b>Source</b>	<b>Analyzer</b>	<b>Number of days exceeding standard on rolling 365-day average basis</b>		
		<b>3<sup>rd</sup> Quarter</b>	<b>4<sup>th</sup> Quarter</b>	<b>Total</b>
FCCU, 112C-1	12A-6961X	0	0	0

d) The CO 365-day rolling average was exceeded as shown below:

<b>Start</b>	<b>Readings (ppmv), by day, during periods of excess daily rolling 365- day average</b>
No exceedances	-
<b>Total days excess for Period</b>	<b>0</b>
Total days excess – 1 <sup>st</sup> Quarter	0
Total days excess – 2 <sup>nd</sup> Quarter	0
Days of Operation 1 <sup>st</sup> Quarter	92
Days of Operation 2 <sup>nd</sup> Quarter	92
Days of Operation, Reporting Period	184
% Excess 1 <sup>st</sup> Quarter	0%
% Excess 2 <sup>nd</sup> Quarter	0%
% Excess for Reporting Period	0%

e) During the second half of 2009 112C-1 did not exceed the NSPS CO standard (500 ppmvd, corrected to 0% excess air, 1-hr average basis) by more than 5 % of the FCCU total operating time in either quarter.

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f) The FCCU CO CEMS downtime is summarized below:

Source	Analyzer	Number of hours of Downtime		
		1 <sup>st</sup> Quarter	2 <sup>nd</sup> Quarter	Total
112C-1	12A-6961R	162.00	412.25	574.25

A significant amount of the downtime was attributed to issues with the O<sub>2</sub> system's probe. A temporary system has been connected and RATA conducted beginning July 1.

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**Duration of NO<sub>x</sub> Exceedances**

- a) The NSPS standard of 40 ppmvd NO<sub>x</sub>, corrected to 0% O<sub>2</sub>, was exceeded on a daily rolling 7-day average as summarized below:

Source	Analyzer	Number of days exceeding standard on rolling 7-day average basis		
		1 <sup>st</sup> Quarter	2 <sup>nd</sup> Quarter	Total
FCCU, 112C-1	12A-6964V	0	0	0

- b) The daily rolling 7-day average NO<sub>x</sub> standard was exceeded as shown below:

Start	Readings (ppmv), by day, during periods of excess daily rolling 7-day average
No Exceedances	-
<b>Total days excess for Period</b>	0
Total days excess – 1 <sup>st</sup> Quarter	0
Total days excess – 2 <sup>nd</sup> Quarter	0
Days of Operation 1 <sup>st</sup> Quarter	90
Days of Operation 2 <sup>nd</sup> Quarter	91
Days of Operation, Reporting Period	181
% Excess 1 <sup>st</sup> Quarter	0%
% Excess 2 <sup>nd</sup> Quarter	0%
% Excess for Reporting Period	0%

- c) The daily rolling 365-day average NO<sub>x</sub> standard was exceeded:

Source	Analyzer	Number of days exceeding standard on rolling 365-day average basis		
		1 <sup>st</sup> Quarter	2 <sup>nd</sup> Quarter	Total
FCCU, 112C-1	12A-6964X	0	0	0

The rolling 365-day average NO<sub>x</sub> limit of 20 ppmv, db (corrected to 0% O<sub>2</sub>) became effective on 12/31/2007. 365 days of operation vs. that limit was achieved on 12/30/2008. So that is when that limit became relevant.

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- d) The NO<sub>x</sub> 365-day rolling average was exceeded as shown below:

<b>Start</b>	<b>Readings (ppmv), by day, during periods of excess daily rolling 365- day average</b>
No exceedances	-
<b>Total days excess for Period</b>	0
Total days excess – 1 <sup>st</sup> Quarter	0
Total days excess – 2 <sup>nd</sup> Quarter	0
Days of Operation 1 <sup>st</sup> Quarter	90
Days of Operation 2 <sup>nd</sup> Quarter	91
Days of Operation, Reporting Period	181
% Excess 1 <sup>st</sup> Quarter	0%
% Excess 2 <sup>nd</sup> Quarter	0%
% Excess for Reporting Period	0%

The rolling 365-day average NO<sub>x</sub> limit of 20 ppmv, db (corrected to 0% O<sub>2</sub>) became effective on 12/31/2007. 365 days of operation vs. that limit was achieved on 12/30/2008. So that is when that limit became relevant.

- e) During the second half of 2009 112C-1 did not exceed the NSPS NO<sub>x</sub> standard (40 ppmvd, corrected to 0% excess air, daily rolling 7-day average basis) by more than 5 % of the FCCU total operating time in either quarter.
- f) The FCCU NO<sub>x</sub> CEMS downtime is summarized below:

<b>Source</b>	<b>Analyzer</b>	<b>Number of hours of Downtime</b>		
		<b>1<sup>st</sup> Quarter</b>	<b>2<sup>nd</sup> Quarter</b>	<b>Total</b>
112C-1	12A-6964V	162.00	412.25	574.25

A significant amount of the downtime was attributed to issues with the O<sub>2</sub> system's probe. A temporary system has been connected and RATA conducted beginning July 1.



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**Duration of SO<sub>2</sub> Exceedances**

- a) The NSPS standard of 40 ppmvd SO<sub>2</sub>, corrected to 0% O<sub>2</sub> was exceeded on a daily rolling 7-day average as summarized below:

Source	Analyzer	Number of days exceeding standard on rolling 7-day average basis		
		1 <sup>st</sup> Quarter	2 <sup>nd</sup> Quarter	Total
FCCU, 112C-1	12A-6963V	0	0	0

- b) The daily rolling 7-day average SO<sub>2</sub> standard was exceeded as shown below:

Start	Readings (ppmv), by day, during periods of excess daily rolling 7-day average
No exceedances	-
<b>Total days excess for Period</b>	
Total days excess – 1 <sup>st</sup> Quarter	0
Total days excess – 2 <sup>nd</sup> Quarter	0
Days of Operation 1 <sup>st</sup> Quarter	90
Days of Operation 2 <sup>nd</sup> Quarter	91
Days of Operation, Reporting Period	181
% Excess 1 <sup>st</sup> Quarter	0%
% Excess 2 <sup>nd</sup> Quarter	0%
% Excess for Reporting Period	0%

- c) The daily rolling 365-day average SO<sub>2</sub> standard (25 ppmv, db, corr to 0% O<sub>2</sub>) was exceeded as indicated below:

Source	Analyzer	Number of days exceeding standard on 365-day rolling average basis		
		1 <sup>st</sup> Quarter	2 <sup>nd</sup> Quarter	Total
FCCU, 112C-1	12A-6963X	0	0	0

The rolling 365-day average SO<sub>2</sub> limit of 25 ppmv, db (corrected to 0% O<sub>2</sub>) became effective on 12/31/2007. 365 days of operation vs. that limit was achieved on 12/30/2008. So that is when that limit became relevant.

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- d) The daily rolling 365-day average SO<sub>2</sub> standard (25 ppmv, db corr to 0% O<sub>2</sub>) was exceeded as shown below:

<b>Start</b>	<b>Readings (ppmv), by day, during periods of excess daily rolling 365- day average</b>
No exceedances	-
<b>Total days excess for Period</b>	
Total days excess – 1 <sup>st</sup> Quarter	0
Total days excess – 2 <sup>nd</sup> Quarter	0
Days of Operation 1 <sup>st</sup> Quarter	90
Days of Operation 2 <sup>nd</sup> Quarter	91
Days of Operation, Reporting Period	181
% Excess 1 <sup>st</sup> Quarter	0%
% Excess 2 <sup>nd</sup> Quarter	0%
% Excess for Reporting Period	0%

The rolling 365-day average SO<sub>2</sub> limit of 20 ppmv, db (corrected to 0% O<sub>2</sub>) became effective on 12/31/2007. 365 days of operation vs. that limit was achieved on 12/30/2008, so that is when that limit became relevant.

- e) During the second half of 2009 112C-1 did not exceed the NSPS SO<sub>2</sub> standard (50 ppmvd, corrected to 0% excess air, 1-hr average basis) by more than 5 % of the FCCU total operating time in either quarter.
- f) The FCCU SO<sub>2</sub> CEMS downtime is summarized below:

<b>Source</b>	<b>Analyzer</b>	<b>Number of hours of Downtime</b>		
		<b>1<sup>st</sup> Quarter</b>	<b>2<sup>nd</sup> Quarter</b>	<b>Total</b>
112C-1	12A-6963V	162.00	412.25	574.25

A significant amount of the downtime was attributed to issues with the O<sub>2</sub> system's probe. A temporary system has been connected and RATA conducted beginning July 1.

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**Attachment 2**

**Heaters and Boilers**

Not applicable this reporting period

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**Attachment 3**

**Fuel Gas Combustion Devices, NSPS Exceedances**

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**ATTACHMENT 3**

**Fuel Gas Combustion Devices, NSPS Exceedances**

**Background**

The Lemont Refinery monitors fuel gas to its fuel gas combustion devices using fuel gas H<sub>2</sub>S analyzers on eight fuel gas loops. There were periods during the reporting period when various analyzers read above 0.1 gr H<sub>2</sub>S/dscf fuel gas (equivalent to 161.5 ppmv) on a 3-hr rolling average basis (calculated hourly).

**Duration of Exceedances**

- a) The NSPS standard of 0.1 gr H<sub>2</sub>S /dscf fuel gas (equivalent to 161.5 ppmv) was exceeded on a rolling 3-hr average as summarized below:

Source	Analyzer	Number of hours exceeding standard on 3-hr rolling average basis		
		1 <sup>st</sup> Quarter	2 <sup>nd</sup> Quarter	Total
South Plant fuel gas <sup>a</sup>	43A-1903	0	11	11
U114/116 fuel gas <sup>b, c</sup>	25A490BES	0	2	2
U115/125 fuel gas <sup>c, d</sup>	25A490AES	0	1	1
Coker 2 fuel gas <sup>e, f</sup>	09A-1904	0	3	3
Coker 2 PSA gas <sup>f, g</sup>	09A-1909	0	0	0
U118/122 fuel gas <sup>h</sup>	22A4920AES	2	12	14
U123 fuel gas <sup>i, j</sup>	23A-7000ES	0	10	10
North Plant boiler fuel gas <sup>j, k</sup>	43A-7010E	0	4	4

<sup>a</sup> 102B-2, 103B-1, 111B-1A, 111B-1B, 111B-2, 112B-1, 112B-2, 113B-1, 113B-2, 113B-3, 119C-1A, 119C-1B, 121B-7C, 121B-7D, 430B-1

<sup>b</sup> 114B-1, 114B-2, 114B-3, 116B-1, 116B-2, 116B-3, 116B-4

<sup>c</sup> U114/116 and U115/125 fuel gas loops share an analyzer (the analyzer alternates between fuel gas loops).

<sup>d</sup> 115B-1, 115B-2, 125B-1, 125B-2

<sup>e</sup> 106B-1, 107B-21 (idle), 108B-41, 108B-42, 109B-62

<sup>f</sup> Coker 2 fuel gas and Coker 2 PSA gas loops share an analyzer (the analyzer alternates between fuel gas loops).

<sup>g</sup> 109B-62

<sup>h</sup> 118B-1, 118B-51, 122B-1, 122B-2

<sup>i</sup> 123B-1, 123B-2, 123B-3, 123B-4, 123B-5

<sup>j</sup> U123 and North Plant Boiler fuel gas loops share an analyzer (the analyzer alternates between fuel gas loops).

<sup>k</sup> 431B-20



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b) The 3-hr rolling average NSPS standard was exceeded as shown below:

	Readings (ppmv), by analyzer by hour, during periods of excess rolling 3-hour averages							
	South Plant fuel gas	U114/116 fuel gas	U115/125 fuel gas	Coker 2 fuel gas	Coker 2 PSA gas	U118/122 fuel gas	U123 fuel gas	North Plant boiler fuel gas
<b>1<sup>st</sup> Quarter</b>								
3/27/2010 15:00						175		
3/27/2010 16:00						192		
Total hours in 1 <sup>st</sup> Quarter	0	0	0	0	0	2	0	0
<b>2<sup>nd</sup> Quarter</b>								
4/1/2010 15:00	239							
4/1/2010 16:00	250					172		
4/1/2010 17:00	217					164		
5/23/2010 12:00	166							
5/23/2010 13:00	169							
5/23/2010 15:00						291		
5/23/2010 16:00						258		
5/23/2010 17:00	175	171	175			337		
5/23/2010 18:00						214		
5/23/2010 19:00	240	164				211		
5/23/2010 20:00	442					284		
5/23/2010 21:00	615					562	199	207
5/23/2010 22:00	491					688	238	246
5/23/2010 23:00	248					500	248	244
5/24/2010 0:00						195	241	183
5/24/2010 1:00							254	
5/24/2010 2:00							250	
5/24/2010 3:00							238	
5/24/2010 4:00							217	
5/24/2010 5:00							197	
5/24/2010 6:00							168	
5/24/2010 7:00				190				
5/24/2010 8:00				194				
5/24/2010 9:00				191				
Total hours in 2 <sup>nd</sup> Quarter	11	2	1	3	0	12	10	4
<b>No. of hours for Semi-annual Period</b>	<b>11</b>	<b>2</b>	<b>1</b>	<b>3</b>	<b>0</b>	<b>14</b>	<b>10</b>	<b>4</b>
Hours of Operation, 1 <sup>st</sup> Quarter	2,159.00	2,159.00	2,159.00	2,159.00	2,159.00	2,159.00	2,159.00	2,159.00
Hours of Operation, 2 <sup>nd</sup> Quarter	2,184.00	2,184.00	2,184.00	2,184.00	2,184.00	2,184.00	2,184.00	1,894.27

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	Readings (ppmv), by analyzer by hour, during periods of excess rolling 3-hour averages							
	South Plant fuel gas	U114/116 fuel gas	U115/125 fuel gas	Coker 2 fuel gas	Coker 2 PSA gas	U118/122 fuel gas	U123 fuel gas	North Plant boiler fuel gas
<b>Total for Semi-annual Period</b>	4,343.00	4,343.00	4,343.00	4,343.00	4,343.00	4,343.00	4,343.00	4,053.27
% Excess, 1 <sup>st</sup> Quarter	0.00%	0.00%	0.00%	0.00%	0.00%	0.09%	0.00%	0.00%
% Excess, 2 <sup>nd</sup> Quarter	0.50%	0.09%	0.05%	0.14%	0.00%	0.55%	0.46%	0.21%
<b>% Excess, Semi-annual Period</b>	0.25%	0.05%	0.02%	0.07%	0.00%	0.32%	0.23%	0.10%

- c) During the first half of 2010, no fuel gas loop's H<sub>2</sub>S exceeded the NSPS 3-hr rolling average standard as a percentage of the respective fuel gas loop's or boiler's total operating times by more than 5% in either quarter.
- d) The H<sub>2</sub>S CMS downtime for the various fuel gas loops is summarized below:

Source	Analyzer	Number of hours of CMS downtime		
		1 <sup>st</sup> Quarter	2 <sup>nd</sup> Quarter	Total
South Plant fuel gas	43A-1903	44.75	7.75	52.50
U114/116 fuel gas	25A490BES	52.50	14.25	66.75
U115/125 fuel gas	25A490AES	52.50	14.25	66.75
Coker 2 fuel gas	09A-1904	11.00	0.00	11.00
Coker 2 PSA gas	09A-1909	11.00	1.50	12.50
U118/122 fuel gas	22A4920AES	0.50	52.50	53.00
U123 fuel gas	23A-7000ES	6.25	0.00	6.25
North Plant boiler fuel gas	43A-7010E	6.25	0.00	6.25

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**Attachment 4**

**Sulfur Recovery Plant Tail Gas Exceedences**

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**ATTACHMENT 4**

**Sulfur Recovery Plant, NSPS Exceedances**

**Background**

The Lemont Refinery monitors its Tail Gas Recovery System on four Sulfur Plant Claus Trains, Trains “A,” “B,” “C” and “D,” using CEMS SO<sub>2</sub> analyzers. These SO<sub>2</sub> analyzers have recorded the following, non-maintenance related deviations, where the CEMS SO<sub>2</sub> analyzer, corrected for 0% dry O<sub>2</sub>, read above 250 ppm on a 12hr rolling average calculated on a 1 hour basis.

**Duration of Exceedances**

- a) The NSPS standard of 250ppm, corrected for 0% dry O<sub>2</sub>, was exceeded on a rolling 12-hr average as summarized below:

Source	Analyzer	Number of hours exceeding standard on 12-hr rolling average basis		
		1 <sup>st</sup> Quarter	2 <sup>nd</sup> Quarter	Total
U119 A-Train	19A-998D	44	57	101
U119 B-Train	19A-1998D	0	97	97
U121 C-Train	21A-999D	0	44	44
U121 D-Train	21A-1999D	0	26	26

- b) The 12-hr rolling average NSPS standard was exceeded as shown below:

Start	Readings (ppmv), by analyzer by hour, during periods of excess rolling 12-hr average, by analyzer			
	U119 A-Train	U119 B-Train	U121 C-Train	U121 D-Train
<b>1<sup>st</sup> Quarter</b>	-	-	-	-
2/26/2010 22:00	306	-	-	-
2/26/2010 23:00	361	-	-	-
2/27/2010 0:00	446	-	-	-
2/27/2010 1:00	492	-	-	-
2/27/2010 2:00	539	-	-	-
2/27/2010 3:00	578	-	-	-
2/27/2010 4:00	605	-	-	-
2/27/2010 5:00	628	-	-	-
2/27/2010 6:00	646	-	-	-
2/27/2010 7:00	660	-	-	-
2/27/2010 8:00	672	-	-	-
2/27/2010 9:00	681	-	-	-
2/27/2010 10:00	543	-	-	-
2/27/2010 11:00	811	-	-	-
2/27/2010 12:00	1042	-	-	-
2/27/2010 13:00	1182	-	-	-
2/27/2010 14:00	1382	-	-	-
2/27/2010 15:00	1373	-	-	-



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Start	Readings (ppmv), by analyzer by hour, during periods of excess rolling 12-hr average, by analyzer			
	U119 A-Train	U119 B-Train	U121 C-Train	U121 D-Train
2/27/2010 16:00	1363	-	-	-
2/27/2010 17:00	1353	-	-	-
2/27/2010 18:00	1343	-	-	-
2/27/2010 19:00	1335	-	-	-
2/27/2010 20:00	1328	-	-	-
2/27/2010 21:00	1321	-	-	-
2/27/2010 22:00	1314	-	-	-
2/27/2010 23:00	993	-	-	-
2/28/2010 0:00	680	-	-	-
2/28/2010 1:00	496	-	-	-
2/28/2010 2:00	251	-	-	-
3/12/2010 11:00	294	-	-	-
3/12/2010 12:00	434	-	-	-
3/12/2010 13:00	748	-	-	-
3/12/2010 14:00	1131	-	-	-
3/12/2010 15:00	1132	-	-	-
3/12/2010 16:00	1132	-	-	-
3/12/2010 17:00	1131	-	-	-
3/12/2010 18:00	1127	-	-	-
3/12/2010 19:00	1112	-	-	-
3/12/2010 20:00	1102	-	-	-
3/12/2010 21:00	1084	-	-	-
3/12/2010 22:00	1042	-	-	-
3/12/2010 23:00	948	-	-	-
3/13/2010 0:00	807	-	-	-
3/13/2010 1:00	492	-	-	-
<b>2<sup>nd</sup> Quarter</b>	-	-	-	-
4/1/2010 22:00	-	-	252	-
4/1/2010 23:00	-	-	258	-
4/2/2010 0:00	-	-	262	-
4/5/2010 4:00	-	-	300	-
4/5/2010 5:00	-	-	402	-
4/5/2010 6:00	-	-	486	-
4/5/2010 7:00	-	-	564	-
4/5/2010 8:00	-	-	645	-
4/5/2010 9:00	-	-	671	-
4/5/2010 10:00	-	-	676	-
4/5/2010 11:00	-	-	669	-
4/5/2010 12:00	-	-	643	-
4/5/2010 13:00	-	-	609	-
4/12/2010 9:00	-	-	347	-
4/12/2010 10:00	-	-	303	-
4/12/2010 11:00	-	-	292	-
4/12/2010 12:00	-	-	261	-
4/14/2010 9:00	-	599	-	-

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	U119 A-Train	U119 B-Train	U121 C-Train	U121 D-Train
4/14/2010 10:00	-	995	-	-
4/14/2010 11:00	-	1421	-	-
4/14/2010 12:00	-	1811	-	-
4/14/2010 13:00	-	2166	-	-
4/14/2010 14:00	-	2517	-	-
4/14/2010 15:00	-	2862	-	-
4/14/2010 16:00	-	3203	-	-
4/14/2010 17:00	-	3541	-	-
4/14/2010 18:00	-	3877	-	-
4/14/2010 19:00	-	4212	-	-
4/14/2010 20:00	-	4513	-	-
4/14/2010 21:00	-	4331	-	-
4/14/2010 22:00	-	4266	-	-
4/14/2010 23:00	-	4180	-	-
4/15/2010 0:00	-	4131	-	-
4/15/2010 1:00	-	4122	-	-
4/15/2010 2:00	-	4116	-	-
4/15/2010 3:00	-	4116	-	-
4/15/2010 4:00	-	4120	-	-
4/15/2010 5:00	-	4127	-	-
4/15/2010 6:00	-	4136	-	-
4/15/2010 7:00	-	4147	-	-
4/15/2010 8:00	-	4190	-	-
4/15/2010 9:00	-	4291	-	-
4/15/2010 10:00	-	4390	-	-
4/15/2010 11:00	-	4470	-	-
4/15/2010 12:00	-	4762	-	-
4/15/2010 13:00	-	4697	-	-
4/15/2010 14:00	-	4455	-	-
4/15/2010 15:00	-	4258	-	-
4/15/2010 16:00	-	4021	-	-
4/15/2010 17:00	-	3765	-	-
4/15/2010 18:00	-	3511	-	-
4/15/2010 19:00	-	3249	-	-
4/15/2010 20:00	-	2973	-	-
4/15/2010 21:00	-	2623	-	-
4/15/2010 22:00	-	2253	-	-
4/15/2010 23:00	-	2075	-	-
4/16/2010 0:00	-	1584	-	-
4/16/2010 1:00	-	1422	-	-
4/16/2010 2:00	-	1418	-	-
4/16/2010 3:00	-	1352	-	-
4/16/2010 4:00	-	1311	-	-
4/16/2010 5:00	-	1281	-	-
4/16/2010 6:00	-	1239	-	-
4/16/2010 7:00	-	1197	-	-

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	U119 A-Train	U119 B-Train	U121 C-Train	U121 D-Train
4/16/2010 8:00	-	1157	-	-
4/16/2010 9:00	-	1118	-	-
4/16/2010 10:00	-	1084	-	-
4/16/2010 11:00	-	874	-	-
4/16/2010 12:00	-	762	-	-
4/16/2010 13:00	-	674	-	-
4/16/2010 14:00	-	590	-	-
4/16/2010 15:00	-	520	-	-
4/16/2010 16:00	-	461	-	-
4/16/2010 17:00	-	409	-	-
4/16/2010 18:00	-	365	-	-
4/16/2010 19:00	-	326	-	-
4/16/2010 20:00	-	295	-	-
4/16/2010 21:00	-	271	-	-
4/23/2010 6:00	-	274	-	-
4/23/2010 7:00	-	369	-	-
4/23/2010 8:00	-	513	-	-
4/23/2010 9:00	-	684	-	-
4/23/2010 10:00	-	831	-	-
4/23/2010 11:00	-	961	-	-
4/23/2010 12:00	-	1083	-	-
4/23/2010 13:00	-	1196	-	-
4/23/2010 14:00	-	1204	-	-
4/23/2010 15:00	-	1198	-	-
4/23/2010 16:00	-	1184	-	-
4/23/2010 17:00	-	1156	-	-
4/23/2010 18:00	-	1121	-	-
4/23/2010 19:00	-	1035	-	-
4/23/2010 20:00	-	899	-	-
4/23/2010 21:00	-	735	-	-
4/23/2010 22:00	-	593	-	-
4/23/2010 23:00	-	464	-	-
4/24/2010 0:00	-	338	-	-
4/29/2010 22:00	-	-	1,620	-
4/29/2010 23:00	-	-	2,832	-
4/30/2010 0:00	-	-	2,882	-
4/30/2010 1:00	-	-	2,890	-
4/30/2010 2:00	-	-	2,892	-
4/30/2010 3:00	-	-	2,892	-
4/30/2010 4:00	-	-	2,892	-
4/30/2010 5:00	-	-	2,892	-
4/30/2010 6:00	-	-	2,892	-
4/30/2010 7:00	-	-	2,891	-
4/30/2010 8:00	-	-	2,891	-
4/30/2010 9:00	-	-	2,891	-
4/30/2010 10:00	-	-	1,365	-

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	U119 A-Train	U119 B-Train	U121 C-Train	U121 D-Train
5/23/2010 15:00	-	-	467	-
5/23/2010 16:00	-	266	569	291
5/23/2010 17:00	263	298	604	349
5/23/2010 18:00	291	323	633	412
5/23/2010 19:00	330	368	668	481
5/23/2010 20:00	452	390	690	523
5/23/2010 21:00	681	404	703	556
5/23/2010 22:00	704	410	705	558
5/23/2010 23:00	720	426	708	556
5/24/2010 0:00	730	435	712	555
5/24/2010 1:00	782	443	713	554
5/24/2010 2:00	930	425	657	465
5/24/2010 3:00	958	376	361	347
5/24/2010 4:00	1146	350	260	289
5/24/2010 5:00	1150	333	-	-
5/24/2010 6:00	1137	320	-	-
5/24/2010 7:00	1104	283	-	-
5/24/2010 8:00	997	260	-	-
5/24/2010 9:00	1164	-	-	-
5/24/2010 10:00	1592	-	-	-
5/24/2010 11:00	2064	-	-	-
5/24/2010 12:00	2545	-	-	-
5/24/2010 13:00	2917	-	-	-
5/24/2010 14:00	3070	-	-	-
5/24/2010 15:00	3260	-	-	-
5/24/2010 16:00	3097	-	-	-
5/24/2010 17:00	3078	-	-	-
5/24/2010 18:00	3073	-	-	-
5/24/2010 19:00	3075	-	-	-
5/24/2010 20:00	3067	-	-	-
5/24/2010 21:00	2677	-	-	-
5/24/2010 22:00	2231	-	-	-
5/24/2010 23:00	1750	-	-	-
5/25/2010 0:00	1344	-	-	-
5/25/2010 1:00	1069	-	-	-
5/25/2010 2:00	946	-	-	-
5/25/2010 3:00	896	-	-	-
5/25/2010 4:00	1031	-	-	-
5/25/2010 5:00	1208	-	-	436
5/25/2010 6:00	1384	-	-	664
5/25/2010 7:00	1556	-	-	707
5/25/2010 8:00	1726	-	-	707
5/25/2010 9:00	1959	-	-	698
5/25/2010 10:00	2168	-	-	687
5/25/2010 11:00	2328	-	-	685
5/25/2010 12:00	2411	-	-	685

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Start	Readings (ppmv), by analyzer by hour, during periods of excess rolling 12-hr average, by analyzer			
	U119 A-Train	U119 B-Train	U121 C-Train	U121 D-Train
5/25/2010 13:00	2444	-	-	687
5/25/2010 14:00	2385	-	-	689
5/25/2010 15:00	2245	-	-	686
5/25/2010 16:00	2046	-	-	614
5/25/2010 17:00	1849	-	-	333
5/25/2010 18:00	1661	-	-	-
5/25/2010 19:00	1479	-	-	-
5/25/2010 20:00	1300	-	-	-
5/25/2010 21:00	1058	-	-	-
5/25/2010 22:00	839	-	-	-
5/25/2010 23:00	670	-	-	-
5/26/2010 0:00	497	-	-	-
5/26/2010 1:00	311	-	-	-
<b>Total Hrs for Period</b>	<b>101</b>	<b>97</b>	<b>44</b>	<b>26</b>
Total Excess Hrs 1 <sup>st</sup> Quarter	44	-	-	-
Total Excess Hrs 2 <sup>nd</sup> Quarter	57	97	44	26
Total Excess Hrs – this period	101	97	44	26
Hrs of Operation 1 <sup>st</sup> Quarter	1,967	2,159	2159	2159
Hrs of Operation 2 <sup>nd</sup> Quarter	2,184	2,048	2019.5	2184
Hrs of Operation – this period	4,151	4,207	4,179	4,343
% Excess 1 <sup>st</sup> Quarter	2.24%	0.00%	0.00%	0.00%
% Excess 2 <sup>nd</sup> Quarter	2.61%	4.74%	2.18%	1.19%
% Excess – this period	2.43%	2.31%	1.05%	0.60%

- c) The 12-hour rolling average NSPS standard was exceeded:
- 1 event, totaling 29 hours (A-Train CEMS SO<sub>2</sub> Analyzer 19A-998D)
  - 1 event, totaling 15 hours (A-Train CEMS SO<sub>2</sub> Analyzer 19A-998D)
  - 1 event, totaling 3 hours (C-train CEMS SO<sub>2</sub> Analyzer 21A-999D)
  - 1 event, totaling 10 hours (C-train CEMS SO<sub>2</sub> Analyzer 21A-999D)
  - 1 event, totaling 4 hours (C-train CEMS SO<sub>2</sub> Analyzer 21A-999D)
  - 1 event, totaling 61 hours (B-Train CEMS SO<sub>2</sub> Analyzer 19A-1998D)
  - 1 event, totaling 19 hours (B-Train CEMS SO<sub>2</sub> Analyzer 19A-1998D)
  - 1 event, totaling 13 hours (C-train CEMS SO<sub>2</sub> Analyzer 21A-999D)
  - 1 event, totaling 114 train-hours, lasting 59 hours (A-train CEMS SO<sub>2</sub> Analyzer 19A-998D, B-train CEMS SO<sub>2</sub> Analyzer 19A-1998D, C-train CEMS SO<sub>2</sub> Analyzer 21A-999D and D-train CEMS SO<sub>2</sub> Analyzer 21A-1999D)
- d) During the first half of 2010, none of the sulfur recovery unit trains' SO<sub>2</sub> exceeded the NSPS standard (250 ppmv, corrected to 0% excess air, 12-hr rolling average basis) by more than 5% of the respective train's total operating time. .

**Duration of CEMS Downtime**

- e) The SRU CEMS downtime for 119 A-Train and B-Train and 121 C-Train and D-Train is summarized below:

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Source	Analyzer	Number of hours of Downtime		
		1 <sup>st</sup> Quarter	2 <sup>nd</sup> Quarter	Total
U119 A-Train	19A-999D	84.25	8.5	92.75
U119 B-Train	19A-1999D	5	33.75	38.75
U121 C-Train	21A-999D	74.75	30.75	105.5
U121 D-Train	21A-1999D	134.5	39.25	173.75



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**Attachment 5**

**PMO Plan Revision Log**

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**ATTACHMENT 5**

**PMO Plan Revision Log**

**7/21/2005**      **Revision 1**

**Section 2 –**

*Sulfur shedding procedures were further developed to handle more situations.*

Original: 119404 Emergency Shutdown of C/D MEA Regenerator  
121/216 Reaction to C or D Train Trip

Revised: 119503 - Reaction to A-Train and/or B-Train Shutdown  
119506 - Emergency Shutdown of C/D MEA Regenerators  
119507 - MEA Regenerator Emergency Shutdown Guidelines  
121507 - Reaction to C or D Train Trip  
121508 - Reaction to C and D Train Trip

**Appendix B –**

Procedure	Procedure Title	Modification to PMO Plan
119605	119605 - 119F-401C Sour Water Separator Shutdown Procedure	Revised and Title changed (does not have a "/" in title)
119614	119614 - A Train Heat Soak & Burn-Off Guidelines	Revised and Title changed (does not have a "/" in title)
119615	119615 - MEA Regenerator Shutdown Procedure	Revised and Title changed (does not have a "/" in title)
119616	119616 D-3, D-4, D-5 Sour Water Stripper Shutdown Procedure	Revised and Title changed (does not have a "/" in title)
119621	119621 - 19GB-1A/B Combustion Air Blower Shutdown Procedure	Revised and Title changed (does not have a "/" in title)
119623	119623 - B Train Heat Soak & Burn-Off Guidelines	Revised and Title changed (does not have a "/" in title)
119/631	B-Train AAG / Natural Gas Heat Soak and Shutdown with N2 Purge	Revised and Title changed (does not have a "/" in title)
119631	D-6 SW Stripper Shutdown Procedure	Revised and Title changed (does not have a "/" in title)
119/711	119/711 "B" Train Start-Up Procedure	Deleted - Was combined with 119710
119706	119706 - Start-Up Procedure For MEA Reclaimer E-405	Revised and Title changed (does not have a "/" in title)
119707	119707 - D-3 Sour Water Stripper Start-Up	Revised and Title changed (does not have a "/" in title)
119710	119710 - Restarting A or B Train after Tripping out	Revised and Title changed (does not have a "/" in title)
119713	119713 - 19D-1B MEA Regenerator Start-Up Procedure	Revised and Title changed (does not have a "/" in title)
119716	119716 - Sulfur Recovery Train Pre Start-Up Checklist	Revised and Title changed (does not have a "/" in title)
119725	119725 - F401C Startup Procedure	Revised and Title changed (does not have a "/" in title)
119726	119726 - "B" Train Startup Procedure (Following a Complete Burnoff)	Revised and Title changed (does not have a "/" in title)
121/600	121/600 Clearing Procedure For TK478	Was not included in previous PMO Plan
121/602	121/602 31TK-479 Sulfide Spend Caustic Tank Neutralization Procedure	Was not included in previous PMO Plan
121/603	121/603 31TK-483- Fresh Caustic Tank Neutralization Procedure	Was not included in previous PMO Plan
121/605	121/605 Shutting Down Autoclave 21D-5C	Was not included in previous PMO Plan
121/606	121/606 Shutdown And Clearing Of Converter Beds	Was not included in previous PMO Plan
121621	121621 - C Train BMS Initiated Shutdown	Was not included in previous PMO Plan
121622	121622 D Train BMS Initiated Shutdown	Was not included in previous PMO Plan

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121631	121631 - C Train Normal Shutdown Procedure	Was not included in previous PMO Plan
121632	121632 - D Train Normal Shutdown Procedure	Was not included in previous PMO Plan
121703	121703 - Presulfiding Procedure For "C" Train	Revised and Title changed (does not have a "/" in title)
121704	121704 - Presulfiding Procedure For "D" Train	Revised and Title changed (does not have a "/" in title)
121705	121705 - C or D Train Pre Start-Up Checklist	Revised and Title changed (does not have a "/" in title)
121723	121723 - C Train Hot-Start Procedure	Revised and Title changed (does not have a "/" in title)
121724	121724 - D Train Hot Start Procedure	Revised and Title changed (does not have a "/" in title)
121730	121730 "C" Train Startup (Without Adequate Burnoff)	Revised and Title changed (does not have a "/" in title)
121732	121732 - "D" Train Startup Procedure (Without Adequate Burnoff)	Revised and Title changed (does not have a "/" in title)

Appendix C –

Procedure	Procedure Title	Modification to PMO Plan
119402	119402 - Emergency Shutdown With No Evacuation	Deleted, actions are now covered in 119505
119500	119500 - H2S Alarm Procedure	Was not included in previous PMO Plan
119501	119501 - Low Oxidizer Temperature and/or Oxidizer Flameout	Was not included in previous PMO Plan
119502	119502 - Bomb Threat Procedure	Was not included in previous PMO Plan
119503	119503 - Reaction to A-Train and/or B-Train Shutdown	New Procedure
119505	119505 - Emergency Shutdown Caused By Complete Power Outage	Was 119403
119506	119506 - Emergency Shutdown of C/D MEA Regenerators	Was 119404
119507	119507 - MEA Regenerator Emergency Shutdown Guidelines	Was 119405
121501	121501 - Provide Continuous Combustion Of H2S During Loss Of Stretford Circulation	Was not included in previous PMO Plan
121502	121502 Relighting The Combuster With The Train On Stream And Stretford Circulating	Was not included in previous PMO Plan
121503	121503 Relighting The Combuster With The Train On Stream And Stretford Circulating With The Portable Ignitor Device	Was not included in previous PMO Plan
121504	121504 Provide Continuous Combustion Of H2S During Planned Shutdown Of Stretford Circulation	Was not included in previous PMO Plan
121505	121505 Low Combustor Temperature And/Or Combustor Flameout	Was not included in previous PMO Plan
121506	121506 Bomb Threat Procedure	Was not included in previous PMO Plan
121507	121507 - Reaction to C or D Train Trip	New Procedure
121508	121508 - Reaction to C and D Train Trip	New Procedure
121509	121509 - Emergency Shutdown With No Evacuation	Was 121402
121510	121510 Oxygen Shutdown at C Train	Was 121421
121511	121511 - Oxygen Shutdown at D Train	Was 121422

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12/21/2005    Revision 2

**Section 12 –**

*Section 12 “PMO Plan Responsibilities” was changed to Section 13.*

*Section 12 “Optimization Studies / Incident Report Root Cause Analyses” was added, which is shown below:*

**12.0 Optimization Studies / Incident Report Root Cause Analyses**

Below are the latest optimizations studies completed since 2004 on each system related to the Sulfur Recovery Complexes:

A and B Train Optimization Study (2004)

- This study conducted by Brimstone Engineering to provide recommendations for the Interim Performance Standard. Nine recommendations were made. All recommendations have either been implemented or are to be implemented at next Turnaround. The list of actions and recommendations are available upon request.

Below are the official incident report completed since 2004 on each system related to the Sulfur Recovery Complexes:

No official incident report root cause analyses have been performed or were required.

**Section 6 – Upgrades and Installations Already in Place**

C and D Trains:

**3) Sulfur Reliability:**

A Sulfur Reliability Team was formed, primarily to improve reliability associated with the C and D Trains BMS Shutdown and Startup. The following actions have so far been implemented:

- Replace all BMS limit switch valves with more reliable style (2005)
- Install more reliable style chopper valves on C-Train Nitrogen purge (2005)
- Replace C-Train Waste Heat Boiler Level Switch with a level transmitter used for shutdown (2005)
- Replace C and D-Train Waste Heat Boiler level transmitter with more reliable design (2005)
- Revise BMS startup graphic with more user friendly format (2005)

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**Appendix B –**

<b>Procedure</b>	<b>Procedure Title</b>	<b>Modification to PMO Plan</b>
119700	119700 119E-21 - BFW Cooler Start-Up Procedure	Revised and Title Changed (does not have a "/" in title)
119701	119701 119F-14 Condensate Drum Start-Up Procedure	Revised and Title Changed (does not have a "/" in title)
119702	119702 119F-15 Slop Oil Collector Start-Up Procedure	Revised and Title Changed (does not have a "/" in title)
119703	119703 119F-21C MEA Separator Start-Up and Operating Procedure	Revised and Title Changed (does not have a "/" in title)
119704	119704 119F-50 Condensate Drum Start-Up Procedure	Revised and Title Changed (does not have a "/" in title)
119705	119705 F-18 Fuel Gas Knockout Start-Up Procedure	Revised and Title Changed (does not have a "/" in title)
119708	119708 - D-4 Sour Water Stripper Start-Up	Revised to be D-4 Specific
119709	119709 - D-5 Sour Water Stripper Start-Up	Revised and Title Changed (does not have a "/" in title)
119711	119711 - "A" Train Startup After Burn Off	Was 119/724.
119712	119712 - D-6 Sour Water Stripper Start-up	Was 119/724.
119714	119714 19D-401C MEA Regenerator Start-Up Procedure	Revised and Title Changed (does not have a "/" in title)
119715	119715 19D-401D MEA Regenerator Start-Up Procedure	Revised and Title Changed (does not have a "/" in title)
119717	119717 "A" Sulfur Recovery Train Pre Start-Up Pressure Test	Revised and Title Changed (does not have a "/" in title)
119718	119718 "B" Sulfur Recovery Train Pre Start-Up Pressure Test	Revised and Title Changed (does not have a "/" in title)
119719	119719 Lighting Sulfur Train Burners Using The Ignitor Guns	Revised and Title Changed (does not have a "/" in title)
119720	119720 19F-3A MEA Filter Start-Up Procedure	Revised and Title Changed (does not have a "/" in title)
119721	119721 19F-3B MEA Precoat Filter Start-Up Procedure	Revised and Title Changed (does not have a "/" in title)
119722	119722 19GB-1A/B Combustion Air Blower Cold Start-Up Procedure	Revised and Title Changed (does not have a "/" in title)
119723	119723 19G-403E/404C Lean MEA Pump Cold Start-Up Procedure	Revised and Title Changed (does not have a "/" in title)
119/631	B-Train AAG / Natural Gas Heat Soak and Shutdown with N2 Purge	Deleted - This is an obsolete procedure. Use 119623
119/724	119/724 D-6 Sour Water Stripper Start-up	Renumbered as 119712
119/724	119/724 "A" TRAIN STARTUP AFTER BURNOFF	Renumbered as 119711
119/724	119/724 - D-6 Sour Water Stripper Start-up Procedure	Deleted - Actions are now covered in 119712
121721	121721 - C Train-BSRP Cold Start Procedure	Revised and Title Changed (does not have a "/" in title)
121722	121722 - D Train-BSRP Cold Start Procedure	Revised and Title Changed (does not have a "/" in title)
121/731	121/731 "C" Train Normal Cold Startup Procedure	Deleted - Actions are now covered in 121631

**8/4/2006      Revision 3**

**Section 1 – Lemont Refinery Sulfur Recovery Complex Overview**

Original –

Two (401 and 402) are designed to process 450 GPM of amine solution and the other two (403 and 404) are designed to process 900 GPM of amine solution."

Revision –

Two (19D-1A and 19D-1B) are designed to process 450 GPM of amine solution and the other two (19D-401C and 19D-401D) are designed to process 900 GPM of amine solution."

Original –

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- Revision --
- 6. Needle Coker Fuel Gas
  - 6. North Plant Coker Fuel Gas

**Section 6 – Upgrades and Installations Already in Place**

C and D Trains – 3) Sulfur Reliability:

Original --

- Install more reliable style chopper valves on C-Train Nitrogen purge (2005)
- Replace C-Train Waste Heat Boiler Level Switch with a level transmitter used for shutdown (2005)

Revision --

- Install more reliable style chopper valves on C-Train and D-Train's nitrogen purge, natural gas and oxygen chopper valves (2005/2006)
- Replace C-Train and D-Train Waste Heat Boiler Level Switch with a level transmitter used for shutdown (2005/2006)

A and B Trains –

Original --

- 1) Remote Igniters on A-Train Front End Burner

Revision --

- 1) Remote Igniters on A-Train Front End and Aux Burner

Added –

- 3) Sulfur Pit Vent Gas Recovery  
This project routes the trace amounts of H<sub>2</sub>S from A-Train sulfur pit to the incinerator for conversion to SO<sub>2</sub>.

**Appendix B –**

Procedure #	Procedure Title	Modification to PMO Plan
119601	119601 - D-6 Shutdown for Instrument Transfer to Delta V	New Procedure
119711	119711 - A-Train Startup After Burn Off or Catalyst Change Out	Revised and Title Changed
119727	119727 - 19D-1A Regenerator Start-Up Procedure	New Procedure - Similar to 119113
121706	121706 - C or D Sulfur Recovery Train Pre Startup Pressure Test	New Procedure- Similar to 119117 and 119118
121709	121709 Lighting The Tail Gas Combustor	Revised and Title Changed (does not have a "/" in title)
121/700	121/700 Commissioning & Start-Up Unit 121 Sulfur And BSRP Complex Refractory Curing Procedure	Deleted - Actions are now covered in 121721 and 121722
121/606	121/606 Shutdown And Clearing Of Converter Beds	Expired - Actions are now covered in 121631 and 121632
121/701	121/701 "C" Train/BSRP Refractory Dry-Out Procedure	Expired - Actions are now covered in 121814
121/702	121/702 "D" Train/BSRP Refractory Dry-Out Procedure	Expired - Actions are now covered in 121814
121-722	121/722 "D" Train/BSRP Cold Start Procedure	Expired - Actions are now covered in 121722



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1/24/2007      *Revision 4*

**Section 6 – Mechanical Upgrades and Installations**

C and D Trains - Sulfur Reliability:

Original --

A Sulfur Reliability Team was formed primarily to improve reliability associated with the C and D Trains BMS Shutdown and Startup Systems.

- Replace BMS limit switch valves with more reliable style,
- Install more reliable style chopper valves on C-Train and D-Train's nitrogen purge, natural gas and oxygen chopper valves (2005/2006)
- Replace C-Train and D-Train Waste Heat Boiler Level Switch with a level transmitter used for shutdown (2005/2006)
- Replaced C and D-Train Waste Heat Boiler level transmitter with more reliable design.
- Revised BMS startup graphic with more user friendly format.

Revision --

A Sulfur Reliability Team was formed primarily to improve reliability associated with the C and D Trains BMS Shutdown and Startup Systems.

- Replace BMS limit switch valves with more reliable style,
- Install more reliable style chopper valves on C-Train and D-Train's nitrogen purge, natural gas and oxygen chopper valves (2005/2006)
- Replace C-Train and D-Train Waste Heat Boiler Level Switch with a level transmitter used for shutdown (2005/2006)
- Replaced C and D-Train Waste Heat Boiler level transmitter with more reliable design.
- Revised BMS startup graphic with more user friendly format.
- Upgraded all piping and valves on C and D-Train contact condensers to correct metallurgy (from carbon steel to 304 stainless steel).

Added –

4) Sulfur Pit Vent Gas Recovery:

This project routes the trace amounts of H<sub>2</sub>S from D-Train sulfur pit to the incinerator for conversion to SO<sub>2</sub>.

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**Section 13 – PMO Plan Responsibilities**

Original --

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Revision –

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**Appendix B –**

Procedure #	Procedure Title	Modification to PMO Plan
119601	119601 - Temporary shutdown of D-6 Sour water Stripper	Revised & Title Changed
119614	119614 - A Train Shutdown Procedure	Revised & Title Changed
119623	119623 - B Train Shutdown Procedure	Revised & Title Changed
119501	119501 - A or B Train Oxidizer Flameout or Low Oxidizer Temp	Revised & Title Changed
121504	121504 Relighting The Combustor During Loss of Stretford Circulation	Revised & Title Changed

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Planned Upgrades and Installations

Original –

2) Sulfur Pit Vent Gas Recovery

This project will route the trace amounts of H<sub>2</sub>S that are in the sulfur pit to the incinerator for conversion to SO<sub>2</sub>.

Revision –

2) Sulfur Pit Vent Gas Recovery

This project will route the trace amounts of H<sub>2</sub>S that are in each sulfur pit to the incinerator for conversion to SO<sub>2</sub>. A-Train and D-Train pit vents are currently installed.

Added –

4) MEA Conversion

This project will convert the refinery amine system into a system that instead will use a tertiary amine. The new amine will allow for increased concentration and higher rich solvent loadings, which can greatly reduce the system circulation, save energy, and unload the capacity-limiting lean amine cooling system.

07/25/2007    Revision 5

**Section 2 – Sulfur Shedding Procedures**

Original --

Operators and supervisors should maintain records of what actions were taken in accordance with this plan. This plan is encompassed in the following procedures depending on the cause of the sulfur shed.

119503 - Reaction to A-Train and/or B-Train Shutdown

119506 - Emergency Shutdown of C/D MEA Regenerators

119507 - MEA Regenerator Emergency Shutdown Guidelines

121507 - Reaction to C or D Train Trip

121508 - Reaction to C and D Train Trip

Revision --

Operators and supervisors should maintain records of what actions were taken in accordance with this plan. This plan is encompassed in the following procedures depending on the cause of the sulfur shed.

119503 - Reaction to A-Train and/or B-Train Shutdown

119506 - Emergency Shutdown of C/D MEA Regenerators

119507 - MEA Regenerator Emergency Shutdown Guidelines

121500 - Refinery Sulfur Train Load Shedding Procedure

121507 - Reaction to C and/or D Train Trip

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- Combined 121507 and 121508 – Renamed 121507 Reaction to C and/or D Trian Trip and deleted 121508
- Added 121500 – Refinery Sulfur Train Load Shedding Procedure

**Section 6 – Mechanical Upgrades and Installations**

Original --

4) MEA Conversion

This project will convert the refinery amine system into a system that instead will use a tertiary amine. The new amine will allow for increased concentration and higher rich solvent loadings, which can greatly reduce the system circulation, save energy, and unload the capacity-limiting lean amine cooling system.

Revision --

4) MEA Conversion to MDEA

This project will convert the refinery amine system into a system that instead will use a tertiary amine. The new amine will allow for increased concentration and higher rich solvent loadings, which can greatly reduce the system circulation, save energy, and unload the capacity-limiting lean amine cooling system. Combined

- to MDEA

**Section 10 – Notification Procedure**

- Added     5) Event:     Tail Gas Oxidizer Stack Temperature Falls Below 874°F  
                 Action:     Operator immediately notifies Shift Area Supervisor.  
                                 Operator calls in a 3333.  
                                 Operator documents the event with a  
                                 Malfunction/Breakdown Report.  
                                 Supervisor notifies Environmental Department.

**Section 11 – Process Hazard Analysis Evaluations**

- Added – Hazop A&B Train Tail Gas Unit Project

**Section 13 – PMO Plan Responsibilities**

Original --

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Revision –

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**Appendix B –**

Procedure #	Procedure Title	Modification to PMO Plan
119/606	119/606 119F-50 Condensate Drum Shutdown Procedure	Procedure Renumbered 119606 and Procedure Renamed 119606...
121500	121500 Refinery Sulfur Train Load Shedding Procedure	Created New Procedure
121507	121507 Reaction to C and/or D Train Trip	Removed Procedure 121508, combined 121508 and 121507, renamed 121507 to Reaction to C and/or D Train Trip
121508	121508 Reaction to C and D Train Trip	Removed Procedure 121508, combined 121508 and 121507, renamed 121507 to Reaction to C and/or D Train Trip

**02/06/2008    Revision 6**

**Section 6 – Mechanical Upgrades and Installations**

Original

C and D Trains

4) Sulfur Pit Vent Gas Recovery

...H<sub>2</sub>S from D-Train

Revision

4) ...H<sub>2</sub>S from C and D-Train

Original

A and b Trains

3) Sulfur Pit Vent Gas Recovery

...H<sub>2</sub>S from A-Train

Revision

4) ...H<sub>2</sub>S from A and B-Train

Original

Planned Upgrades and Installations

2) Sulfur Pit Vent Gas Recovery

Revision

Removed – Item completed

Original

Planned Upgrades and Installations

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2) Sulfur Pit Vent Gas Recovery

Revision

Removed – Item completed, realigned numbering

Original

Planned Upgrades and Installations

Now 1-3

Revision

4) Medium Level Oxygen Enrichment

C and D Train Front End Burners for the combustion furnace will be modified to accommodate medium level oxygen enrichment. Modifications will add additional capacity to both C and D Train.

**Section 10 – Notification Procedure**

Original

No number 6

Revision

6) Event: A or B Train Oxidizer Stack Temperature fall below 1050 for the daily average on a 24 rolling hour basis.

Action: Operator immediately notifies Shift Area Supervisor

Operator calls in a 3333.

Operator documents the event with a Malfunction/Breakdown Report.

Shift supervisor notifies Environmental Department

**Section 12 – Optimization Studies/Incident Report Root Cause Analyses**

Original

All recommendations either have been or are to be implemented at next Turnaround.

Revision

All recommendations have been implemented

Original

No 2007-12-06

Revision

An Acid gas flaring event at 844C-2 occurred December 6 (3:11-3:52) when both C- and D-Trains tripped. Andy Kobler was the lead investigator. Copies of the Incident Investigation Report 071206 provided upon request.

**Section 13 – PMO Plan Responsibilities**

Original

... updated on an annual basis

Revision

... updated on a semi-annual basis

**Appendix B – Start-up and Shutdown Procedures**

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**Revisions**

Procedures removed

119605 - 119F-401C Sour Water Separator Shutdown Procedure  
119700 119E-21 - BFW Cooler Start-Up Procedure  
119701 119F-14 Condensate Drum Start-Up Procedure  
119702 119F-15 Slop Oil Collector Start-Up Procedure  
119705 F-18 Fuel Gas Knockout Start-Up Procedure  
121706 - C or D Sulfur Recovery Train Pre Startup Pressure Test  
119/600 119E-21 BFW Cooler Shutdown Procedure  
119/602 119F-14 Condensate Drum Shutdown Procedure  
119/603 119F-15 Slop Oil Collector Shutdown Procedure  
119/604 119F-20 Sour Water Collection Drum Shutdown Procedure  
119/606 119F-50 Condensate Drum Shutdown Procedure  
119/609 F-7 And 4 Tank Shutdown Procedure  
119/610 F-18 Fuel Gas Knockout Shutdown Procedure  
119/612 Procedure For Clearing Overhead Condensers  
119/617 19F-3A MEA Filter Shutdown Procedure  
119/619 Procedure To Slump D-4 Stripper  
119/624 SW Gas Header Shutdown/Clear Procedure  
119/627 MEA Gas Header Shutdown/Clear Procedure  
121/600 Clearing Procedure For TK478  
121/603 31TK-483- Fresh Caustic Tank Neutralization Procedure

Procedures Added

119613 Regenerator Shutdown Procedure  
121633 C Sulfur Train Hot Shutdown Procedure  
121634 C Sulfur Train Hot Shutdown Procedure

**Appendix C – Lemont Refinery SRC Emergency Operating Procedures**

**Revision**

Procedures Removed

121505 Low Combustor Temperature And/Or Combustor Flameout  
121509 - Emergency Shutdown With No Evacuation

Procedures Added

119504 Response to Sulfur Pit Fire  
121512 Response to Sulfur Pit Fire



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**07/01/2008    Revision 7**

**Section 1 – Lemont Refinery Sulfur Recovery Complex Overview**

Original --

There are a total of twelve absorbers on the refinery amine header, each listed below:

Revision --

There are a total of thirteen absorbers on the refinery amine header, each listed below:

Added --

13. North Plant Flare

**Section 6 – Mechanical Upgrades and Installations**

Under C and D Train Sulfur Reliability Added --

- Sealing Sulfur Pits to ensure ejector is working properly and sulfur vapor is being recovered.
- Changed the nitrogen purge on C-Train to improve train reliability.

Under A and B Train Added --

4) Sulfur Reliability

Sealing Sulfur Pits to ensure ejector is working properly and sulfur vapor is being recovered.

Under Planned Upgrades and Installations Added --

5) D-Train nitrogen purge configuration

Nitrogen purge configuration will be changed to improve reliability.

**Section 9 – Critical Operating Variables**

Added --

Flaring of Sour Water or MEA Acid Gas	<ul style="list-style-type: none"><li>• DCS Display</li><li>• Flow Meter on Sour Water Gas Vent and MEA Acid Gas Vent</li><li>• Deviation and High pressure alarm on MEA Acid Gas</li><li>• Deviation alarm on Sour Water Gas</li></ul>	<ul style="list-style-type: none"><li>• Troubleshoot Process</li><li>• Notify Shift/Unit Supervisor</li><li>• Cut H2S Production per Sulfur Shedding Procedure if necessary</li></ul>
Tail Gas Oxidizer Stack Temperature Falls Below	<ul style="list-style-type: none"><li>• DCS Display</li><li>• Temperature on Tail</li></ul>	<ul style="list-style-type: none"><li>• Troubleshoot Process</li><li>• Route MEA Gas to other</li></ul>

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874°F	Gas Oxidizer Stack • Low alarm on Tail Gas Oxidizer Stack Temperature • Low low alarm on Tail Gas Oxidizer Stack Temperature	Trains if possible • Notify Shift/Unit Supervisor
-------	--	--

## Section 12 – Process Hazard Analysis Evaluations

Added --

An acid gas flaring event at 844C-2 occurred March 8, 2008 (03:30) when D train tripped. Joe Noreiko was the lead investigator. Copies of the Investigation Report 080308 are provided upon request.

## Section 13 – PMO Plan Responsibilities

Original --

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Operations Process Engineer  
(630) 257 - 4359  
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Revision –

Beverly Pate  
Operations Process Engineer  
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## Appendix B & C –

Procedure #	Procedure Title	Modification to PMO Plan
119606	119606 119F-50 Condensate Drum Shutdown Procedure	Added missing procedure
119617	119617 19F-3A MEA Filter Shutdown Procedure	Added missing procedure
119728	119728 - Nitrogen Purge D-3 Stripper prior to Startup	Added missing procedure
119729	119729 - Regenerator Startup	Added missing procedure
119/724	119/724 D-6 Sour Water Stripper Start-up	Added missing procedure
121/606	121/606 Shutdown And Clearing Of Converter Beds	Added missing procedure
121/701	121/701 "C" Train/BSRP Refractory Dry-Out Procedure	Added missing procedure
121/702	121/702 "D" Train/BSRP Refractory Dry-Out Procedure	Added missing procedure
121500	121500 - REFINERY SULFUR TRAIN LOAD SHEDDING PROCEDURE	Added missing procedure

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Procedure #	Procedure Title	Modification to PMO Plan
121509	121509 - Emergency Shutdown With No Evacuation	Added missing procedure
121513	121513 - BMS PANEL C SULFUR TRAIN HOT START	Added missing procedure
121514	121514 - BMS PANEL D SULFUR TRAIN HOT START	Added missing procedure
121515	121515 - D Sulfur Train Shutdown with C Sulfur Train in T/A	Added missing procedure
121/602	121/602 31TK-479 Sulfide Spend Caustic Tank Neutralization Procedure	Deleted Procedure - no longer in data base
121508	121508 - Reaction to C and D Train Trip	Deleted Procedure - no longer in data base
119/725	119725 – F401C Startup Procedure	Edited Title

**01/01/2009    Revision 8**

**Section 5 – Ultrasonic thickness monitoring**

Original --

The hard copy results of the thickness readings are filed with the Inspection Department and are retained for the life of the equipment location.

Revision --

The hard copy results of the thickness readings are filed with the Inspection Department and are retained for the life of the equipment.

**Section 6 – Mechanical Upgrades and Installations**

**Upgrades and Installations Already in Place**

C and D Trains:

Revision -- Added

- 5) Metallurgy Upgrades:  
Piping in high temperature MEA service (piping between the regenerator / reboiler and the regenerator / bottoms cooler) will be upgraded to stainless steel. This is to reduce corrosion. A portion of this has been completed.

A and B Trains:

Revision -- Added

- 5) D-Train nitrogen purge configuration:  
Nitrogen purge configuration will be changed to improve reliability.

**Planned Upgrades and Installations**

Original --

Along with the changes and upgrades in place, there are plans in place to perform several more changes and upgrades, which are planned to be implemented between 2005 and 2009.

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Revision --

Along with the changes and upgrades in place, there are plans in place to perform several more changes and upgrades, which are planned to be implemented between 2009 and 2011.

Original --

1) Metallurgy upgrades

Piping in high temperature MEA service (piping between the regenerator / reboiler and the regenerator / bottoms cooler) will be upgraded to stainless steel. This is to reduce corrosion. A portion of this has been completed.

Revision --

1) Metallurgy upgrades

Piping in high temperature MEA service (piping between the regenerator / reboiler and the regenerator / bottoms cooler) will be upgraded to stainless steel. This is to reduce corrosion. A portion of this has been completed.

Revision -- Added

5) Autoclave Improvements

This project will cover installing contratrace on the overhead piping of C & D Autoclaves and fixing the level transmitters.

6) Replace Stretford Isolation valves and Balance Tank

This project will cover changing out the isolation valves between the oxidizer tanks and between the balance tank and the oxidizer tanks. This will allow the tanks to be worked on without slowing down the refinery. Also the Balance tank needs to be replaced.

7) pH meter reliability

This project will cover upgrading the current pH meters on the C & D contact condensers.

8) D-Train Combustor Fuel Gas Regulator Hand Wheel

This project will cover installing a hand wheel on the fuel gas regulator for D combustor. This will allow D-Train to continue running while doing maintenance on this regulator.

## **Section 9 – Critical Operating Variables**

Original --

Tail Gas Oxidizer Stack Temperature Falls Below 874°F

Revision --

Tail Gas Oxidizer Stack Temperature Falls Below 875°F

Original --

A or B Train Oxidizer Stack Temperature Falls Below 1050 for the daily average on a 24 hour basis

Revision --

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A or B Train Oxidizer Stack Temperature Falls Below 875 °F

**Section 10 – Notification Procedure**

Original --

5) Event: Tail Gas Oxidizer Stack Temperature Falls Below 874°F  
Action: Operator immediately notifies Shift Area Supervisor.  
Operator calls in a 3333.  
Operator documents the event with a Malfunction/Breakdown Report.  
Supervisor notifies Environmental Department.

Revision --

5) Event: Tail Gas Oxidizer Stack Temperature Falls Below 875°F  
Action: Operator immediately notifies Shift Area Supervisor.  
Operator calls in a 3333.  
Operator documents the event with a Malfunction/Breakdown Report.  
Supervisor notifies Environmental Department.

Original --

6) Event: A or B Train Oxidizer Stack Temperature fall below 1050 for the daily average on a 24 rolling hour basis.  
Action: Operator immediately notifies Shift Area Supervisor.  
Operator calls in a 3333.  
Operator documents the event with a Malfunction/Breakdown Report.  
Supervisor notifies Environmental Department.

Revision --

6) Event: A or B Train Oxidizer Stack Temperature fall below 875 °F.  
Action: Operator immediately notifies Shift Area Supervisor.  
Operator calls in a 3333.  
Operator documents the event with a Malfunction/Breakdown Report.  
Supervisor notifies Environmental Department.

**Section 12 – Optimization Studies / Incident Report Root Cause Analyses**

Revision -- Added

An acid gas flaring event at 844C-2 occurred November 21, 2008 (21:52) when an operator error tripped D train. Andy Kobler was the lead investigator. Copies of the Investigation Report 112108 are provided upon request.

**Section 13 – PMO Plan Responsibilities**

Original --

Beverly Pate

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Operations Process Engineer  
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Revision --  
Beverly Rah  
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***Appendix B Start-up and Shutdown Procedures***

Procedure #	Procedure Title	Modification to PMO Plan
119601	119601 - Shutdown of D-6 Sour water Stripper Due to Loss of Pumpsaround Fans	Updated Title
119719	119719 Using Ignitors for Lighting Sulfur Train Burners	Updated Title
119724-B	<b>119/724 D-6 Sour Water Stripper Start-up</b>	Procedure number updated to new system
119725-B	119/725 – F401C Startup Procedure	Procedure number updated to new system

***Appendix C Lemont Refinery SRC Emergency Operating Procedures***

Procedure #	Procedure Title	Modification to PMO Plan
119506-A	119506 - Emergency Shutdown With No Evacuation	Procedure number updated to new system
119506-B	119506 - Emergency Shutdown of C/D MEA Regenerators	Procedure number updated to new system

**07/01/2009    Revision 9**

**Section 1 – Lemont Refinery Sulfur Recovery Complex Overview**

Original --

Two of the trains (A and B) have SRU/Thermal Oxidizer setup

Revision --

Two of the trains (A and B) have SRU/Beavon/Thermal Oxidizer setup

Original --

Each Beavon Tail Gas Unit is equipped with a vanadium/autoclave reclamation system.

Revision --

A and B Train's Beavon Tail Gas Unit is equipped with a Flexsorb amine reclamation system. C and D Train's Beavon Tail Gas Units are equipped with a vanadium/autoclave reclamation system

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Original --

Each ARU train is independent with their own rich amine flash drum, lean and rich amine exchangers.

Revision --

Each ARU is independent with their own rich amine flash drum, lean and rich amine exchangers

Original --

There are a total of thirteen absorbers on the refinery amine header, each listed below:

Revision --

There are a total of thirteen absorbers on the refinery amine header, each listed below. The North Plant Coker Recycle Gas and South Plant Coker Wet Gas Absorbers are not in service.

Original --

5. Hydrotreater Recycle Gas

Revision --

5. North Plant Coker Recycle Gas

Original --

12. Coker Wet Gas

Revision --

12. South Plant Coker Wet Gas

## **Section 2 – Sulfur Shedding Procedure**

Original --

1. Use available SRU/MEA capacity
2. Stop LCO feed at the Diesel Hydrotreater (U25)
3. Reduce FCC feed (U12)
4. Reduce feed to Coker (U13)
5. Reduce Feed to North Plant Coker (U08)
6. Reduce Catalytic Reformer feed (U14)
7. Reduce Feed to Diesel Hydrotreater (U25)
8. Reduce Sour Water Stripper Feed, hold inventory in tankage (U19, U43)
9. Reduce crude oil feed rate (U11)

Revision --

1. Use available SRU/MEA capacity
2. Stop LCO feed at the Diesel Hydrotreater (U25)
3. Reduce feed to Coker (U13)



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4. Reduce Feed to North Plant Coker (U08)
5. Stop LCO feed to FCC first, then Reduce LCGO (U12)
6. Reduce feed to ISAL
7. Reduce feed to Crude (U11)
8. Reduce Catalytic Reformer feed (U14)
9. Reduce LCGO feed to Diesel Hydrotreater (U25)

**Original --**

Operators and supervisors should maintain records of what actions were taken in accordance with this plan. This plan is encompassed in the following procedures depending on the cause of the sulfur shed.

- 119503 - Reaction to A-Train and/or B-Train Shutdown
- 119506 - Emergency Shutdown of C/D MEA Regenerators
- 119507 - MEA Regenerator Emergency Shutdown Guidelines
- 121500 - Refinery Sulfur Train Load Shedding Procedure
- 121507 - Reaction to C and/or D Train Trip

**Revision --**

Operators and supervisors should maintain records of what actions were taken in accordance with this plan. This plan is encompassed in the following procedure and covers a range of events that require sulfur load shedding.

- 121500 - Refinery Sulfur Train Load Shedding Procedure

## **Section 6 – Mechanical Upgrades and Installations**

### Upgrades and Installations Already in Place

**Revision -- Added**

**General Sulfur Unit:**

- 1) Checking Ground Faults (2009)  
The procedure for checking for ground faults was updated as well as better labels for the breakers to prevent unplanned equipment shutdowns.
- 2) Load Shedding Procedure (2009)  
The procedure for load shedding was updated to maximize effectiveness by changing the load shedding sequence, have a board operator on an unaffected unit implement load shedding and give all involved board operators annual training.

**C and D Trains:**

**Revision -- Removed**

- 5) Metallurgy Upgrades:  
Piping in high temperature MEA service (piping between the regenerator / reboiler and the regenerator / bottoms cooler) will be upgraded to stainless steel. This is to reduce corrosion. A portion of this has been completed.

**Revision -- Added**

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- 5) Autoclave Level Control (2009)  
The level control for the autoclaves was updated to provide more reliable operation.

A and B Trains:

Original --

- 4) Sulfur Reliability:  
This project seals the Sulfur Pits to ensure ejector is working properly and sulfur vapor is being recovered.

Revision --

- 4) Sealing Sulfur Pits  
This project seals the Sulfur Pits to ensure ejector is working properly and sulfur vapor is being recovered.

Revision -- Removed

- 5) D-Train nitrogen purge configuration:  
Nitrogen purge configuration will be changed to improve reliability.

Revision -- Added

- 5) Tail gas recovery for A and B  
This project installed a tail gas system for A and B trains, including a Beavon reactor and amine reclamation system.

MEA System:

Revision -- Added

- 2) Metallurgy Upgrades:  
Piping in high temperature MEA service (piping between the regenerator / reboiler and the regenerator / bottoms cooler) will be upgraded to stainless steel. This is to reduce corrosion.

Planned Upgrades and Installations

Revision -- Removed

- 1) Metallurgy upgrades  
Piping in high temperature MEA service (piping between the regenerator / reboiler and the regenerator / bottoms cooler) will be upgraded to stainless steel. This is to reduce corrosion. A portion of this has been completed.

Revision -- Removed

- 2) Tail gas recovery for A and B  
Currently A and B Train do not have Tail Gas Recovery, it is sent directly to an incinerator. The project to install a tail gas system for A and B trains is currently in the design stage, and will be installed by December 2008.

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Original --

- 5) Autoclave Improvements  
This project will cover installing contratrace on the overhead piping of C & D Autoclaves and fixing the level transmitters.

Revision --

- 3) Autoclave Improvements  
This project will cover installing controtrace on the overhead piping of C & D Autoclaves.

Revision -- Added

- 6) D-Train Nitrogen Purge Configuration  
This project will update purge timers for C&D trains.

**Section 9 – Critical Operating Variables**

Original --

Condition	Method of Monitoring	Actions
High Reading on Fuel Gas H2S Analyzer	<ul style="list-style-type: none"> <li>DCS Display</li> <li>High alarm on Fuel Gas H2S at 141 ppm</li> <li>High High alarm on Fuel Gas H2S at 159 ppm</li> </ul>	<ul style="list-style-type: none"> <li>Troubleshoot Process</li> <li>Verify Proper MEA regeneration</li> <li>Verify Correct MEA Fuel Gas Absorber Rates</li> <li>Verify Max Lean MEA Cooling</li> <li>Notify Shift/Unit Supervisor for additional moves</li> </ul>
High Reading on C or D Train SO2 Analyzers	<ul style="list-style-type: none"> <li>DCS Display</li> <li>High alarm on CEMS SO2 at 250 ppm for a 1 hour average</li> </ul>	<ul style="list-style-type: none"> <li>Troubleshoot Process</li> <li>Alert Analyzer Group and have them verify accuracy of meters</li> <li>Route MEA Gas to other Trains if possible</li> <li>Notify Shift/Unit Supervisor</li> </ul>
Pluming From Tail Gas Incinerator	<ul style="list-style-type: none"> <li>Visual Observation</li> <li>High alarm on CEMS</li> <li>DCS Stack Temperature Rise</li> <li>High alarm on Stack Temp at 1250 F</li> </ul>	<ul style="list-style-type: none"> <li>Troubleshoot Process</li> <li>Check Sulfur Leg for Potential plugging</li> <li>Route MEA Gas to other Trains if possible</li> <li>Notify Shift/Unit</li> </ul>

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	<ul style="list-style-type: none"> <li>• High High alarm on Stack Temp at 1350 F</li> </ul>	Supervisor
Flaring of Sour Water or MEA Acid Gas	<ul style="list-style-type: none"> <li>• DCS Display</li> <li>• Flow Meter on Sour Water Gas Vent and MEA Acid Gas Vent</li> <li>• Deviation and High pressure alarm on MEA Acid Gas</li> <li>• Deviation alarm on Sour Water Gas</li> </ul>	<ul style="list-style-type: none"> <li>• Troubleshoot Process</li> <li>• Notify Shift/Unit Supervisor</li> <li>• Cut H2S Production per Sulfur Shedding Procedure if necessary</li> </ul>
Tail Gas Oxidizer Stack Temperature Falls Below 875°F	<ul style="list-style-type: none"> <li>• DCS Display</li> <li>• Temperature on Tail Gas Oxidizer Stack</li> <li>• Low alarm on Tail Gas Oxidizer Stack Temperature</li> <li>• Low low alarm on Tail Gas Oxidizer Stack Temperature</li> </ul>	<ul style="list-style-type: none"> <li>• Troubleshoot Process</li> <li>• Route MEA Gas to other Trains if possible</li> <li>• Notify Shift/Unit Supervisor</li> </ul>
A or B Train Oxidizer Stack Temperature Falls Below 875°F	<ul style="list-style-type: none"> <li>• DCS Display</li> <li>• Temperature on A and B Oxidizer Stacks</li> <li>• Low alarm on A and B Oxidizer Stack Temperatures</li> <li>• Low low alarm on A and B Oxidizer Stack Temperatures</li> </ul>	<ul style="list-style-type: none"> <li>• Troubleshoot Process</li> <li>• Route MEA Gas to other Trains if possible</li> <li>• Notify Shift/Unit Supervisor</li> </ul>

Revision --

Condition	Method of Monitoring	Actions
High Reading on Fuel Gas H2S Analyzer	<ul style="list-style-type: none"> <li>• DCS Display</li> <li>• High alarm on Fuel Gas H2S at 159 ppm</li> </ul>	<ul style="list-style-type: none"> <li>• Troubleshoot Process</li> <li>• Verify Proper MEA regeneration</li> <li>• Verify Correct MEA Fuel Gas Absorber Rates</li> <li>• Verify Max Lean MEA Cooling</li> <li>• Notify Shift/Unit Supervisor for additional moves</li> </ul>
High Reading on Train SO2 Analyzers	<ul style="list-style-type: none"> <li>• DCS Display</li> <li>• High alarm on CEMS</li> </ul>	<ul style="list-style-type: none"> <li>• Troubleshoot Process</li> <li>• Alert Analyzer Group</li> </ul>

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	SO2 at 250 ppm for a 1 hour average	and have them verify accuracy of meters • Route MEA Gas to other Trains if possible • Notify Shift/Unit Supervisor
Flaring of Sour Water or MEA Acid Gas	<ul style="list-style-type: none"> <li>• DCS Display</li> <li>• Flow Meter on Sour Water Gas Vent and MEA Acid Gas Vent</li> <li>• Deviation and High pressure alarm on MEA Acid Gas</li> <li>• Deviation alarm on Sour Water Gas</li> </ul>	<ul style="list-style-type: none"> <li>• Troubleshoot Process</li> <li>• Notify Shift/Unit Supervisor</li> <li>• Cut H2S Production per Sulfur Shedding Procedure if necessary</li> </ul>
Tail Gas Oxidizer Stack Temperature Falls Below 875°F	<ul style="list-style-type: none"> <li>• DCS Display</li> <li>• Temperature on Tail Gas Oxidizer Stack</li> <li>• Low alarm on Tail Gas Oxidizer Stack Temperature</li> </ul>	<ul style="list-style-type: none"> <li>• Troubleshoot Process</li> <li>• Route MEA Gas to other Trains if possible</li> <li>• Notify Shift/Unit Supervisor</li> </ul>

Note: Pluming was removed because now that there is a tail gas unit on A&B it is extremely unlikely.

## Section 10 – Notification Procedure

Original --

- 2) Event: C or D Train SO2 analyzers show a reading above 250ppm on a 12 hour rolling average corrected to 0% excess air.

Revision --

- 2) Event: Train SO2 analyzers show a reading above 250ppm on a 12 hour rolling average corrected to 0% excess air.

Revision -- Removed

- 3) Event: Pluming from tail gas incinerator is seen for at least 8 min.  
Action: Operator immediately notifies Shift Area Supervisor.  
Supervisor immediately notifies local agencies about possible exceedance.  
Operator calls in a 3333.  
Operator documents the event with a Malfunction/Breakdown Report.  
Supervisor notifies Environmental Department.

Revision -- Removed

- 6) Event: A or B Train Oxidizer Stack Temperature fall below 875 °F.

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Action:       Operator immediately notifies Shift Area Supervisor.  
                  Operator calls in a 3333.  
                  Operator documents the event with a Malfunction/Breakdown Report.  
                  Supervisor notifies Environmental Department.

**Section 11 – Process Hazard Analysis Evaluations**

Original --

- Hazop A&B Train Tail Gas Unit Project
- Hazop Revalidation on C and D Trains (2004)
- Hazop Revalidation on A and B Trains, MEA Regenerators, Sour Water Strippers (2003)
- Tier II Project Hazop (2000)

Revision --

- Hazop MDEA Project (2009)
- Hazop A&B Train Tail Gas Unit Project
- Hazop Revalidation on C and D Trains (2004)
- Hazop Revalidation on A and B Trains, MEA Regenerators, Sour Water Strippers (2007)
- Tier II Project Hazop (2000)

**Section 12 – Optimization Studies / Incident Report Root Cause Analyses**

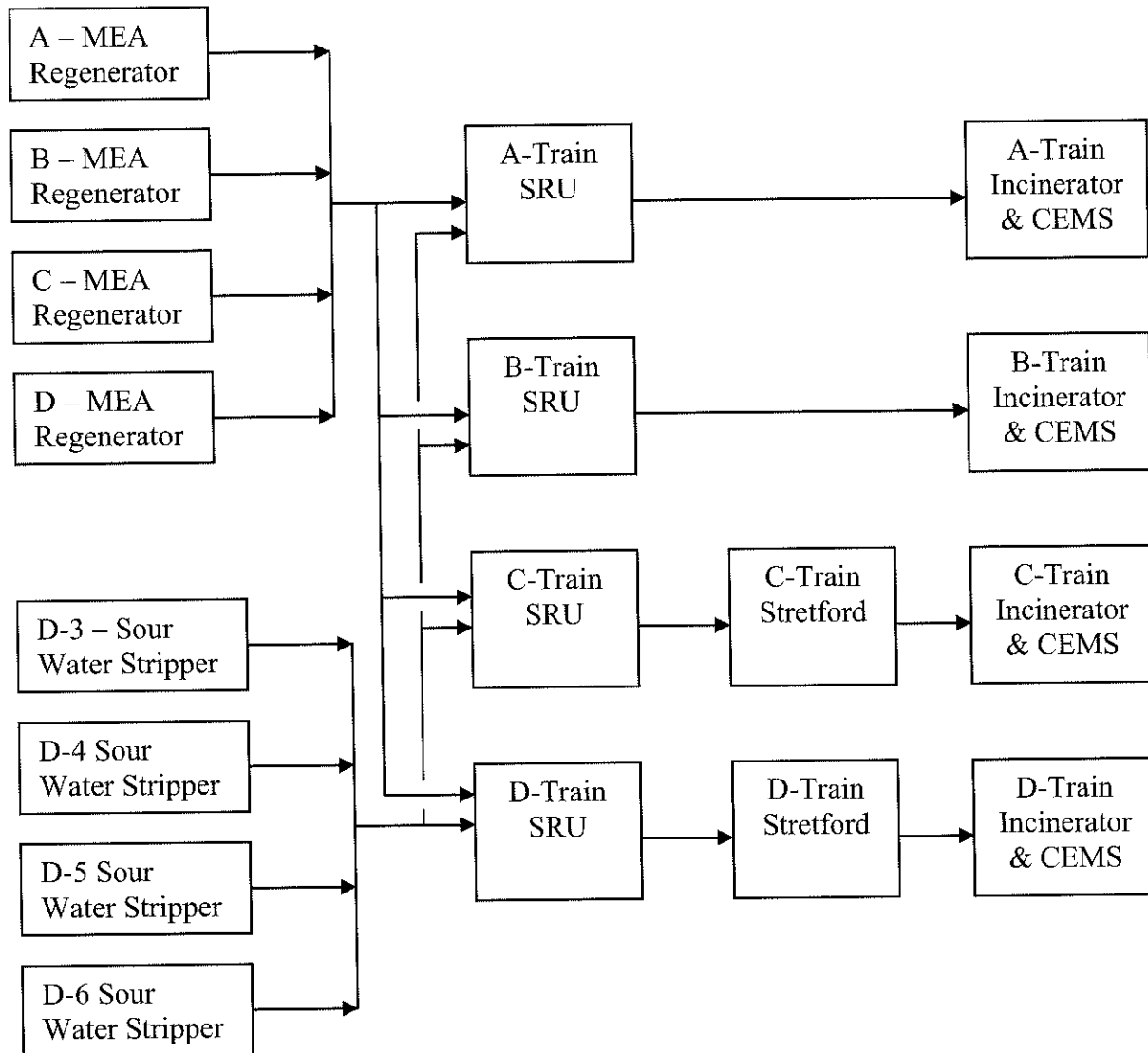
Revision -- Added

An acid gas flaring event at 844C-2 occurred February 4, 2007 (12:46 – 14:00) when C & D train tripped. Rod Sweer was the lead investigator. Copies of the Investigation Report 070204 are provided upon request.

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**Appendix A – Lemont Refinery Sulfur Recovery Complex Simplified Operating Flow Scheme**

Original --





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Revision -

**Appendix B Start-up and Shutdown Procedures**

Procedure #	Procedure Title	Modification to PMO Plan
119725-A	119726 – "B" Train Startup Procedure Following a Complete Burnoff or Catalyst Change	Procedure Number & Title updated
119748	<b>119748 - Restarting A Train to TGU after a Train Trip</b>	New Procedure
119750	<b>119750 - TGU Fill, Circulate and Establish Flow</b>	New Procedure
121730-A	121730 "C" Train Startup (Without Adequate Burnoff)	Procedure Number Update
121730-B	121732 - "D" Train Startup Procedure (Without Adequate Burnoff)	Procedure Number Update

**Appendix C Lemont Refinery SRC Emergency Operating Procedures**

Procedure #	Procedure Title	Modification to PMO Plan
119500	119500 - Responding to a H2S Alarm	Procedure Title Update
119551	119551 - TGU Loss of Booster Blower	New Procedure
121501	121501 - Loss of Stretford Circulation	Procedure Title Update
121509 -B	<b>121509 - Emergency Shutdown With No Evacuation</b>	Procedure Number Update
121510	121510 Oxygen Shutdown at C Train	Deleted
121511	121511 - Oxygen Shutdown at D Train	Deleted
121512	121512 - Responding to a Sulfur Pit Fire	Procedure Title Update

**02/02/2010    Revision 10**

**Section 1 – Lemont Refinery Sulfur Recovery Complex Overview**

Original --

Two (19D-1A and 19D-1B) are designed to process 450 GPM of amine solution and the other two (19D-401C and 19D-401D) are designed to process 900 GPM of amine solution. Each ARU is independent with their own rich amine flash drum, lean and rich amine exchangers. The ARU's provide lean amine to and receive rich amine from the refinery amine header. There are a total of thirteen absorbers on the refinery amine header, each listed below. The North Plant Coker Recycle Gas and South Plant Coker Wet Gas Absorbers are not in service.

Revision --

Two (19D-1A and 19D-1B) are designed to process 450 GPM of amine solution and the other two (19D-401C and 19D-401D) are designed to process 900 GPM of amine solution. The feed for all four ARUs comes through an oil separator that flashes and scrubs light hydrocarbons and decants off heavier hydrocarbons. Each ARU is independent with their own rich amine flash drum, and lean/rich amine exchangers. The ARU's provide lean amine to and

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receive rich amine from the refinery amine header. There are a total of thirteen absorbers on the refinery amine header, each listed below. The South Plant Coker Wet Gas Absorber is not in service

Original --

The D-6 Tower typically process high-cyanide sour water.

Revision --

The D-6 Tower typically processes high-cyanide sour water.

## **Section 2 – Sulfur Shedding Procedure**

Original --

1. Use available SRU/MEA capacity
2. Stop LCO feed at the Diesel Hydrotreater (U25)
3. Reduce feed to Coker (U13)
4. Reduce Feed to North Plant Coker (U08)
5. Stop LCO feed to FCC first, then Reduce LCGO (U12)
6. Reduce feed to ISAL
7. Reduce feed to Crude (U11)
8. Reduce Catalytic Reformer feed (U14)
9. Reduce LCGO feed to Diesel Hydrotreater (U25)

Revision --

1. Use available SRU/MEA capacity
2. Stop LCO feed at the Diesel Hydrotreater (U25)
3. Reduce feed to Coker (U13)
4. Reduce Feed to North Plant Coker (U06)
5. Stop LCO feed from FCC (U12) to Diesel Hydrotreater (U25)
6. Stop LCO feed to FCC first, then Reduce LCGO (U12)
7. Reduce feed to ISAL
8. Reduce feed to Crude (U11)
9. Reduce LCGO feed to Diesel Hydrotreater (U25)

## **Section 6 – Mechanical Upgrades and Installations**

Original --

MEA System

- 1) MEA/Oil Separator  
Installed a new MEA/ oil separator in 2002 to reduce the likelihood of hydrocarbon from entering the SRU's. Hydrocarbon entering the SRU's can result in unit upsets or even pluming.
- 2) Metallurgy Upgrades:

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Piping in high temperature MEA service (piping between the regenerator / reboiler and the regenerator / bottoms cooler) will be upgraded to stainless steel. This is to reduce corrosion.

Revision --

MEA System

- 1) MEA/Oil Separator  
Installed a new MEA/ oil separator in 2002 to reduce the likelihood of hydrocarbon from entering the SRU's. Hydrocarbon entering the SRU's can result in unit upsets or even pluming.
- 2) Metallurgy Upgrades:  
Piping in high temperature MEA service (piping between the regenerator / reboiler and the regenerator / bottoms cooler) was upgraded to stainless steel. This is to reduce corrosion.
- 3) MEA Bottoms Cooler Upgrade:  
The headbox and inlet nozzle thicknesses on 19E-404C, C Regenerator Bottoms Cooler were increased and tube inserts were installed to help reduce corrosion. (2009)

Original --

Planned Upgrades and Installations

Along with the changes and upgrades in place, there are plans in place to perform several more changes and upgrades, which are planned to be implemented between 2009 and 2011.

- 1) MEA Conversion to MDEA  
This project will convert the refinery amine system into a system that instead will use a tertiary amine. The new amine will allow for increased concentration and higher rich solvent loadings, which can greatly reduce the system circulation, save energy, and unload the capacity-limiting lean amine cooling system.
- 2) Medium Level Oxygen Enrichment  
C and D Train Front End Burners for the combustion furnace will be modified to accommodate medium level oxygen enrichment. Modifications will add additional capacity to both C and D Train.
- 3) Autoclave Improvements  
This project will cover installing controtrace on the overhead piping of C & D Autoclaves.
- 4) Replace Stretford Isolation valves and Balance Tank  
This project will cover changing out the isolation valves between the oxidizer tanks and between the balance tank and the oxidizer tanks. This will allow the tanks to be worked on without slowing down the refinery. Also the Balance tank needs to be replaced.
- 5) pH meter reliability  
This project will cover upgrading the current pH meters on the C & D contact condensers.
- 6) D-Train Nitrogen Purge Configuration  
This project will update purge timers for C&D trains.
- 7) D-Train Combustor Fuel Gas Regulator Hand Wheel

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This project will cover installing a hand wheel on the fuel gas regulator for D combustor. This will allow D-Train to continue running while doing maintenance on this regulator.

Revision --

Planned Upgrades and Installations

Along with the changes and upgrades in place, there are plans in place to perform several more changes and upgrades, which are planned to be implemented between 2010 and 2011.

1) MEA Conversion to MDEA

This project will convert the refinery amine system into a system that instead will use a tertiary amine. The new amine will allow for increased concentration and higher rich solvent loadings, which can greatly reduce the system circulation, save energy, and unload the capacity-limiting lean amine cooling system.

2) Medium Level Oxygen Enrichment

C and D Train Front End Burners for the combustion furnace will be modified to accommodate medium level oxygen enrichment. Modifications will add additional capacity to both C and D Train.

3) Autoclave Improvements

This project will cover installing controtrace on the overhead piping of C & D Autoclaves.

4) Replace Stretford Isolation valves and Balance Tank

This project will cover changing out the isolation valves between the oxidizer tanks and between the balance tank and the oxidizer tanks. This will allow the tanks to be worked on without slowing down the refinery. Also the Balance tank needs to be replaced.

5) D-Train Nitrogen Purge Configuration

This project will update purge timers for C&D trains.

6) D-Train Combustor Fuel Gas Regulator Hand Wheel

This project will cover installing a hand wheel on the fuel gas regulator for D combustor. This will allow D-Train to continue running while doing maintenance on this regulator.

7) Board Monitoring of Stretford Air Flow

This project will cover installing three transmitters to monitor the air flow to all three Stretford oxidizer tanks.

8) Board Monitoring of Stretford Heater Flow

This project will cover installing a transmitter to monitor the Stretford flow to the Stretford heater. Ensuring that this flow is maintained will help maintain proper chemical concentration in the Stretford.

9) C Train Steam Turbine knockout drum

This project will cover installing a knockout drum to remove any water from the 220# steam caused during boiler upset conditions. This will prevent train trips due to wet steam.

10) C/D Train Pressure Switch Low Shutdown

This project will cover installing transmitters to replace the current level switches (19LS-339/1339). This will allow troubleshooting of this instrument and prevent

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train trips due to instrument failure.

11) Autoclave Direct Steam Injection Pulsation Dampening

This project will cover installing a permanent system to reduce pressure hammer caused by steam condensation in the autoclave feed lines. This will provide for improved reliability of Stretford froth pumps, and pump discharge line rupture disks and check valves.

**Section 9 – Critical Operating Variables**

Original --

Condition	Method of Monitoring	Actions
High Reading on Fuel Gas H2S Analyzer	<ul style="list-style-type: none"> <li>• DCS Display</li> <li>• High alarm on Fuel Gas H2S at 159 ppm</li> </ul>	<ul style="list-style-type: none"> <li>• Troubleshoot Process</li> <li>• Verify Proper MEA regeneration</li> <li>• Verify Correct MEA Fuel Gas Absorber Rates</li> <li>• Verify Max Lean MEA Cooling</li> <li>• Notify Shift/Unit Supervisor for additional moves</li> </ul>
High Reading on Train SO2 Analyzers	<ul style="list-style-type: none"> <li>• DCS Display</li> <li>• High alarm on CEMS SO2 at 250 ppm for a 1 hour average</li> </ul>	<ul style="list-style-type: none"> <li>• Troubleshoot Process</li> <li>• Alert Analyzer Group and have them verify accuracy of meters</li> <li>• Route MEA Gas to other Trains if possible</li> <li>• Notify Shift/Unit Supervisor</li> </ul>
Flaring of Sour Water or MEA Acid Gas	<ul style="list-style-type: none"> <li>• DCS Display</li> <li>• Flow Meter on Sour Water Gas Vent and MEA Acid Gas Vent</li> <li>• Deviation and High pressure alarm on MEA Acid Gas</li> <li>• Deviation alarm on Sour Water Gas</li> </ul>	<ul style="list-style-type: none"> <li>• Troubleshoot Process</li> <li>• Notify Shift/Unit Supervisor</li> <li>• Cut H2S Production per Sulfur Shedding Procedure if necessary</li> </ul>
Tail Gas Oxidizer Stack Temperature Falls Below 875°F	<ul style="list-style-type: none"> <li>• DCS Display</li> <li>• Temperature on Tail Gas Oxidizer Stack</li> <li>• Low alarm on Tail Gas Oxidizer Stack Temperature</li> </ul>	<ul style="list-style-type: none"> <li>• Troubleshoot Process</li> <li>• Route MEA Gas to other Trains if possible</li> <li>• Notify Shift/Unit Supervisor</li> </ul>

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Revision --		
Condition	Method of Monitoring	Actions
High Reading on Fuel Gas H2S Analyzer	<ul style="list-style-type: none"> <li>DCS Display</li> <li>High alarm on Fuel Gas H2S at 159 ppm</li> </ul>	<ul style="list-style-type: none"> <li>Troubleshoot Process</li> <li>Verify Proper MEA regeneration</li> <li>Verify Correct MEA Fuel Gas Absorber Rates</li> <li>Verify Max Lean MEA Cooling</li> <li>Verify Min Lean MEA flow to 19F-21C scrubbing section</li> <li>Notify Shift/Unit Supervisor for additional moves</li> </ul>
High Reading on Train SO2 Analyzers	<ul style="list-style-type: none"> <li>DCS Display</li> <li>High alarm on CEMS SO2 at 250 ppm for a 1 hour average</li> </ul>	<ul style="list-style-type: none"> <li>Troubleshoot Process</li> <li>Alert Analyzer Group and have them verify accuracy of meters</li> <li>Route MEA Gas to other Trains if possible</li> <li>Notify Shift/Unit Supervisor</li> </ul>
Flaring of Sour Water or MEA Acid Gas	<ul style="list-style-type: none"> <li>DCS Display</li> <li>Flow Meter on Sour Water Gas Vent and MEA Acid Gas Vent</li> <li>High pressure alarm on MEA Acid Gas</li> </ul>	<ul style="list-style-type: none"> <li>Troubleshoot Process</li> <li>Notify Shift/Unit Supervisor</li> <li>Cut H2S Production per Sulfur Shedding Procedure if necessary</li> </ul>
Tail Gas Oxidizer Stack Temperature Falls Below 875°F	<ul style="list-style-type: none"> <li>DCS Display</li> <li>Temperature on Tail Gas Oxidizer Stack</li> <li>Low alarm on Tail Gas Oxidizer Stack Temperature</li> </ul>	<ul style="list-style-type: none"> <li>Troubleshoot Process</li> <li>Route MEA Gas to other Trains if possible</li> <li>Notify Shift/Unit Supervisor</li> </ul>

**Section 11 – Process Hazard Analysis Evaluations**

Original --

Hazop MDEA Project (2009)

Hazop Revalidation on A and B Trains, MEA Regenerators, Sour Water Strippers (2007)

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Hazop A&B Train Tail Gas Unit Project (2007)  
Hazop Revalidation on C and D Trains (2004)  
Tier II Project Hazop (2000)

Revision --

Hazop Revalidation C and D Trains, and Beavon Tail Gas Unit (2009)  
Hazop MDEA Project (2009)  
Hazop Revalidation on A and B Trains, MEA Regenerators, Sour Water Strippers (2007)  
Hazop A&B Train Tail Gas Unit Project (2007)  
Hazop Revalidation on C and D Trains (2004)  
Tier II Project Hazop (2000)

**Section 12 – Optimization Studies/Incident Report Root Cause Analysis**

Original --

Below are the official incident report root cause analyses completed since 2004 on each system related to the Sulfur Recovery Complexes:

An acid gas flaring event at 844C-2 occurred November 21, 2008 (21:52) when an operator error tripped D train. Andy Kobler was the lead investigator. Copies of the Investigation Report 112108 are provided upon request.

Revision --

Below are the official incident report root cause analyses completed since 2004 on each system related to the Sulfur Recovery Complexes:

A off-ratio train event occurred August 11, 200 (3:00) when an operator error caused both C and D trains to go off ratio. Matt Cordina was the lead investigator. Copies of the Investigation Report 081009 are provided upon request.

An acid gas flaring event at 844C-2 occurred November 21, 2008 (21:52) when an operator error tripped D train. Andy Kobler was the lead investigator. Copies of the Investigation Report 112108 are provided upon request.

Revision -

***Appendix B Start-up and Shutdown Procedures***



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Procedure #	Procedure Title	Modification to PMO Plan
119602	A Sulfur Train Acid Gas and Natural Gas Heat Soak and Shutdown for Turbine Uncoupled Trip Testing	New Procedure
119604	B Sulfur Train Hot Shutdown and Restart to Natural Gas Heat Soak	New Procedure
119614	119614 – A Train Shutdown Procedure	Procedure Removed
119616	(D-3, D-4, D-5) Sour Water Stripper Shutdown	Procedure Title updated
119631	(D-6) SW Stripper Shutdown	Procedure Title updated
119707	(D-3) Sour Water Stripper Start-Up	Procedure Title updated
119708	(D-4) Sour Water Stripper Start-Up	Procedure Title updated
119709	(D-5) Sour Water Stripper Start-Up	Procedure Title updated
119712	(D-6) Sour Water Stripper Start-Up	Procedure Title updated
119724-B	119724 D-6 Sour Water Stripper Start-up	New Procedure
119725-B	119725 F401C Startup Procedure	New Procedure
119729	119729 - Regenerator Startup	Procedure Removed
119730	"A" Sulfur Train Start-up after Shutdown	New Procedure
119731	"B" Sulfur Train Start-up after Shutdown	New Procedure
121633	"C" Sulfur Train Hot Shutdown	Procedure Title updated
121634	"D" Sulfur Train Hot Shutdown	Procedure Title updated
121702	121702 "D" Train/BSRP Refractory Dry-Out Procedure	New Procedure
121723	"C" Train Hot Start-up	Procedure Title updated
121702	121702 "D" Train/BSRP Refractory Dry-Out Procedure	Procedure Removed

### ***Appendix C Lemont Refinery SRC Emergency Operating Procedures***

Procedure #	Procedure Title	
119501	"A" or "B" Train Oxidizer Flameout or Low Oxidizer Temp	Procedure Title updated
121421	121510 Oxygen Shutdown at C Train	New Procedure
121422	121511 - Oxygen Shutdown at D Train	New Procedure
121500	Refinery Sulfur Train Load Shedding	Procedure Title updated
121501	121501 - Loss Of Stretford Circulation	Procedure Title updated
121507	Reaction to C or D Train Trip	Procedure Title updated

**07/28/2010 Revision 11**

#### **Section 2 – Sulfur Shedding Procedure**

Original --

The following plan will be implemented in the event that planned/unplanned shutdowns, emergency

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shutdowns, or malfunctions result in excess SRU feed gas or a reduction in MEA processing capacity. These measures shall be taken as soon as possible to reduce emissions as quickly as practicable.

10. Use available SRU/MEA capacity
11. Stop LCO feed at the Diesel Hydrotreater (U25)
12. Reduce feed to Coker (U13)
13. Reduce Feed to North Plant Coker (U06)
14. Stop LCO feed from FCC (U12) to Diesel Hydrotreater (U25)
15. Stop LCO feed to FCC first, then Reduce LCGO (U12)
16. Reduce feed to ISAL
17. Reduce feed to Crude (U11)
18. Reduce LCGO feed to Diesel Hydrotreater (U25)

Operators and supervisors should maintain records of what actions were taken in accordance with this plan. This plan is encompassed in the following procedure and covers a range of events that require sulfur load shedding.

121500 - Refinery Sulfur Train Load Shedding Procedure

Revision --

A procedure is in place to handle sulfur load shedding. This plan is encompassed in the following procedure and covers a range of events that require sulfur load shedding.

121500 - Refinery Sulfur Train Load Shedding Procedure

The plan laid out in the above procedure will be implemented in the event that planned/unplanned shutdowns, emergency shutdowns, or malfunctions result in excess SRU feed gas or a reduction in MEA processing capacity. The procedure will be implemented by the Udex board, which is not otherwise involved in load shedding. These measures shall be taken as soon as possible to reduce emissions as quickly as practicable.

Operators and supervisors will maintain records of what actions were taken in accordance with this plan. The load shed procedure is available on the prism computer system and the most recent copy is posted at the Udex board. This procedure, which is updated periodically, will not be updated in this manual since the current sheets will be available on the computer network.

## **Section 6 – Mechanical Upgrades and Installations**

Revision -- Added Planned Upgrades and Installations

- 12) C/ D Train Pit Vent Rerouting  
This project will moving the pit vent nozzles on the combustors to prevent sulfur solidification in the nozzle and combustor and to allow a more reliable sweep flow.
- 13) C/ D Absorber Level and Pressure Drop Indication  
This project will install level and pressure drop indication on C and D Absorbers to avoid premature shutdowns and reduced rates due to pressure build up.

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- 14) C/D Train Low Pressure Shutdown Switches  
This project will improve the reliability of the train low pressure shutdown switches.
- 15) Stretford Winter Thiosulfate Removal  
This project will make it possible to remove thiosulfates in the winter and help avoid the upsets that occur due to high thiosulfate circulation.

**Section 12 – Optimization Studies/Incident Report Root Cause Analysis**

Revision -- Added

C Train Absorber Plugging event occurred April 1, 2010 (14:24) when an sulfur build-up in the bottom trays of the Absorber caused back pressure and reduced capacity on the train the ultimate shutdown for cleaning and repair. Joe Noreiko was the lead investigator. Copies of the Investigation Report 040110 are provided upon request.

Revision--

***Appendix B Start-up and Shutdown Procedures***

Procedure #	Procedure Title	Modification to PMO Plan
119603	"B" Sulfur Train Acid Gas and Natural Gas Heat Soak and Shutdown for Uncoupled Trip Testing	New
119604	"A" Sulfur Train Shutdown with Natural Gas Burnout	Title Change
119605	"B" Sulfur Train Shutdown with Natural Gas Burnout	New
119606	119606 119F-50 Condensate Drum Shutdown Procedure	Removed
119615	MEA Regenerator Shutdown and Clearing Procedure	Title Change
119703	119703 - 119F-21C MEA Separator Start-Up and Operating Procedure	Removed
119704	119704 - 119F-50 Condensate Drum Start-Up Procedure	Removed
119706	119706 – Start-Up Procedure For MEA Reclaimer E-405	Removed
119707	(D-3) Sour Water Stripper Start-Up	Removed
119708	(D-4) Sour Water Stripper Start-Up	Removed
119709	(D-5) Sour Water Stripper Start-Up	Removed
119710	119710 – Restarting A or B Train after Tripping out	Removed
119711	119711 – A-Train Startup After Burn Off or Catalyst Change Out	Removed
119712	(D-6) Sour Water Stripper Start-Up	Removed
119713	119713 – 19D-1B MEA Regenerator Start-Up Procedure	Removed
119714	119714 - 19D-401C MEA Rengenerator Start-Up Procedure	Removed
119715	119715 - 19D-401D MEA Regenerator Start-Up Procedure	Removed
119716	119716 – Sulfur Recovery Train Pre Start-Up Checklist	Removed
119717	"A" Sulfur Train Pre Start-Up Pressure Test After Major T/A	Title Change
119718	119718 "B" Sulfur Recovery Train Pre Start-Up Pressure Test	Removed
119719	Using a Portable Ignitor for Lighting Sulfur Train Burners.	Title Change

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119724-B	119/724 D-6 Sour Water Stripper Start-up	Removed
119725-A	119726 – "B" Train Startup Procedure Following a Complete Burnoff or Catalyst Change	Removed
119725-B	119/725 F401C Startup Procedure	Removed
11926	Place the Amine Carbon Adsorber System in Service	New
119730	"A" Sulfur Train Start-up after Uncouple Trip Test or Turnaround	Title Change
119731	"B" Sulfur Train Start-up after Uncouple Trip Test or Turnaround	Title Change
119732	A Sulfur Train Pre Startup Pressure Test After Catalyst Changeout	New
119733	"B" Sulfur Train Pre-Startup Pressure Test After Catalyst Changeout	New
121629	C Train Shutdown with 3MM Low Low Combustion Air Flow Trip	New
121630	D Sulfur Train Shutdown with 3 MM Low Low Combustion Air Trip	New
121700	"C" Train Shutdown and Start-up to Natural Gas Operation	New
121701	"D" Train Shutdown and Start-up to Natural Gas Operation	New
121703	Presulfiding Procedure For "C" Train	Title Change
121704	Presulfiding Procedure For "D" Train	Title Change
121706	C or D Sulfur Recovery Train Pre Startup Pressure Test	Title Change
121721	C Train-BSRP Cold Start Procedure	Title Change
121722	D Train-BSRP Cold Start Procedure	Title Change
121725	"C" Sulfur Train Startup with 3 MMSCFD Low/Low Combustion Air Trip	New
121726	D" Sulfur Train Startup with the 3MM Low Low Air Trip	New
119/618	119/618 19F-3B MEA Precoat Filter Shutdown Procedure	Removed
119/622	119/622 19G-403E/404C Lean MEA Pump Shutdown Procedure	Removed
121/605	121/605 Shutting Down Autoclave 21D-5C	Removed
121/606	121/606 Shutdown And Clearing Of Converter Beds	Removed

**Appendix C Lemont Refinery SRC Emergency Operating Procedures**

Procedure #	Procedure Title	
119508	Responding to an H2S Alarm in the MDEA System	New
121421	121510 Oxygen Shutdown at C Train	Removed
121422	121511 - Oxygen Shutdown at D Train	Removed

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**Attachment 6**

**Flaring Incidents**

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Hydrocarbon Flaring RCFA Summary  
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Incident Date	Incident Number	RCFA Completed	Corrective Action Completion Date	Corrective Action Expected Completion Date	Comments
4/3/2010	LE-HC-01-2010-040310	5/13/2010		12/31/2010	see Appendix A
4/29/2010	LE-HC-02-2010-042910	6/11/2010		12/31/2010	see Appendix B
5/23/2010	LE-HC-03-2010-052310	7/7/2010		3/1/2011	see Appendix C
6/18/2010	LE-HC-04-2010-061810	8/2/2010	7/8/10	7/31/2010	see Appendix D

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**Appendix A**



**CITGO Petroleum Corporation  
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Hydrocarbon Flaring Incident Summary – 04/03/2010  
RCA Completed 05/13/2010**

Incident Number: LE-HC-01-2010-040310

**Brief Description of Incident**

At approximately 1:55 a.m. on April 3, 2010, 844GB-401 South Plant Flare Gas Recovery Compressor shut down due to a low suction pressure indication. Operators promptly began what turned out to be multiple attempts to re-start the compressor. Subsequent attempts were unsuccessful as the compressor startup was limited by apparent low lube-oil pressure. The low lube-oil pressure shutdown switch was bypassed, and the compressor re-started at 3:27 a.m.

At 4:52 a.m. the compressor shut down again on low suction pressure. The low suction pressure was bypassed, and the compressor re-started at 5:03 a.m.

<b>Incident Start Date:</b>	04/03/10	<b>Incident Start Time:</b>	1:55
<b>Incident End Date:</b>	04/03/10	<b>Incident End Time:</b>	5:03

<b>Estimated SO<sub>2</sub> Emissions:</b>	0.7 tons	<b>Estimated SO<sub>2</sub> Emission Rate:</b>	439.6 lbs/hr
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**Calculations per Paragraph 92**

$$\begin{aligned}\text{Tons of SO}_2 \text{ Emitted} &= [\text{FR}][\text{TD}][\text{ConcH}_2\text{S}][8.44 \times 10^{-5}] \\ &= [29,861 \text{ SCFH}] [3.13 \text{ hrs}] [0.0871 \text{ scf H}_2\text{S/scf gas}] [8.44 \times 10^{-5}] = 0.7 \text{ Tons} \\ \text{Rate of SO}_2 \text{ emissions in lbs/hr} &= [\text{FR}][\text{ConcH}_2\text{S}][0.169] \\ &= [29,861 \text{ SCFH}] [0.0871 \text{ scf H}_2\text{S/scf gas}] [0.169] = 439.6 \text{ lbs of SO}_2/\text{hr}\end{aligned}$$

Meanings of variables and derivation of multipliers used in the above equations are as listed in paragraph 92.c. of the Consent Decree

**Steps taken to limit the duration and/or quantity of sulfur dioxide emissions**

The flare gas recovery compressor base-load (consisting primarily of purges and small intermittent reliefs) was at low levels prior to the compressor shutdown. And unit operations remained stable through the compressor re-start.

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Hydrocarbon Flaring Incident Summary – 04/03/2010  
RCA Completed 05/13/2010**

**Root Cause and significant contributing cause(s)**

Root-causes:

- 1) **Plugged impulse line on local suction pressure indicator:** A plugged impulse line from the flare gas recovery knockout drum (compressor suction side) to the compressor safety systems resulted in a low pressure reading, causing the compressor to automatically shutdown. There was no malfunction of the compressor.
- 2) **Malfunctioning “Off Delay Timer”:** This timer is a permissive for the compressor re-start, uses lube-oil pressure as one of its inputs, and stops the re-start after a set length of time to protect the compressor electric motor. The failure of this timer resulted in the initial unsuccessful attempts at re-starting the compressor.

**Measures to prevent a recurrence of a similar event and proposed corrective actions**

1. Clear the flare gas recovery compressor knockout drum local suction pressure impulse line.
2. Provide operator training regarding bypassing the low lube-oil pressure shutdown.
3. Replace the “Off-Delay Timer” at the next planned compressor maintenance opportunity.
4. Review the design, configuration and redundancy of the critical instrumentation and equipment associated with the Flare Gas Compressor. Consider whether upgrades are needed to the equipment.
5. Review the critical instrumentation and equipment associated with the Flare Gas Compressor and ensure that the appropriate preventive maintenance program is in place to ensure reliability of the compressor.

**Action Commencement and Completion Dates**

Action	Commencement Dates [mm/yr]	Target Completion Date [mm/yr]	Completion Dates [mm/yr]
1.	04/03/2010		04/03/2010
2.	04/05/2010		04/05/2010

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**Hydrocarbon Flaring Incident Summary – 04/03/2010**  
**RCA Completed 05/13/2010**

Action	Commencement Dates [mm/yr]	Target Completion Date [mm/yr]	Completion Dates [mm/yr]
3.		12/2010	
4.		12/2010	
5.		12/2010	

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**Appendix B**

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**Lemont Refinery**  
**Hydrocarbon Flaring Incident Summary – 04/29/2010**  
**RCA Completed 06/11/2010**

Incident Number: LE-HC-02-2010-042910

**Brief Description of Incident**

On April 29<sup>th</sup> 2010, Lemont Refinery experienced an incident that involved an electrical failure which shutdown the Unsaturated Gas Plant and caused intermittent flaring from the 844C-2 and 844C-3 flares.

At approximately 8:17 p.m. on 4/29/10 the FCC board received a substation alarm associated with the Unsaturated Gas Plant (Unit 212). The outside operator went to Substation 12D/E and found that Substation 12E had a ground fault. The alarm was acknowledged and shortly after that Substation 12E's Main Breaker tripped. When Substation 12E tripped loads running on that substation were lost; this included the majority of the six 212E-314 debutanizer reflux condensers (overhead fin fans). With the loss of most of the 21E-314 cooling fans, the unit relieved to the 844C-2 and 844C-3 flares, beginning at approximately 8:21 p.m.

Process rates elsewhere in the refinery were reduced, and electricians began to assess the situation. After identifying the cause of the shutdown, electricians evaluated the substation and associated loads to ensure that the unit could be re-started. Operators began to implement existing startup procedures, with the intermittent flaring ending at 9:38 p.m.

**C-2**

<b>Incident Start Date:</b>	4/29/10	<b>Incident Start Time:</b>	20:21
<b>Incident End Date:</b>	4/29/10	<b>Incident End Time:</b>	21:38

<b>Estimated SO<sub>2</sub> Emissions:</b>	0.9 tons	<b>Estimated SO<sub>2</sub> Emission Rate:</b>	1355.4 lbs/hr
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**C-3**

<b>Incident Start Date:</b>	4/29/10	<b>Incident Start Time:</b>	20:21
<b>Incident End Date:</b>	4/29/10	<b>Incident End Time:</b>	21:23

<b>Estimated SO<sub>2</sub> Emissions:</b>	0.6 tons	<b>Estimated SO<sub>2</sub> Emission Rate:</b>	1252.3 lbs/hr
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**Calculations per Paragraph 92**

**C-2 flaring (4/29/2010 8:21 p.m. – 4/29/2010 9:38 p.m.)**

$$\begin{aligned} \text{Tons of SO}_2 \text{ Emitted} &= [\text{FR}][\text{TD}][\text{ConcH}_2\text{S}][8.44 \times 10^{-5}] \\ &= [756,604 \text{ SCFH}] [1.28 \text{ hrs}] [0.0106 \text{ scf H}_2\text{S/scf gas}] [8.44 \times 10^{-5}] = 0.9 \text{ Tons} \\ \text{Rate of SO}_2 \text{ emissions in lbs/hr} &= [\text{FR}][\text{ConcH}_2\text{S}][0.169] \\ &= [756,604 \text{ SCFH}] [0.0106 \text{ scf H}_2\text{S/scf gas}] [0.169] = 1355.4 \text{ lbs of SO}_2/\text{hr} \end{aligned}$$

**C-3 flaring (4/29/2010 8:21 p.m. – 4/29/2010 9:23 p.m.)**

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$$\begin{aligned}\text{Tons of SO}_2 \text{ Emitted} &= [\text{FR}][\text{TD}][\text{ConcH}_2\text{S}][8.44 \times 10^{-5}] \\ &= [673,618 \text{ SCFH}] [1.03 \text{ hrs}] [0.0110 \text{ scf H}_2\text{S/scf gas}] [8.44 \times 10^{-5}] = 0.6 \text{ Tons} \\ \text{Rate of SO}_2 \text{ emissions in lbs/hr} &= [\text{FR}][\text{ConcH}_2\text{S}][0.169] \\ &= [673,618 \text{ SCFH}] [0.0110 \text{ scf H}_2\text{S/scf gas}] [0.169] = 1252.3 \text{ lbs of SO}_2/\text{hr}\end{aligned}$$

**Combined flaring (4/29/2010 8:21 p.m. – 4/29/2010 9:38 p.m.)**

$$\begin{aligned}\text{Tons of SO}_2 \text{ Emitted} &= [\text{FR}][\text{TD}][\text{ConcH}_2\text{S}][8.44 \times 10^{-5}] \\ &= [1,298,657 \text{ SCFH}] [1.03 \text{ hrs}] [0.0108 \text{ scf H}_2\text{S/scf gas}] [8.44 \times 10^{-5}] = 1.5 \text{ Tons} \\ \text{Rate of SO}_2 \text{ emissions in lbs/hr} &= [\text{FR}][\text{ConcH}_2\text{S}][0.169] \\ &= [1,298,657 \text{ SCFH}] [0.0108 \text{ scf H}_2\text{S/scf gas}] [0.169] = 2370.3 \text{ lbs of SO}_2/\text{hr}\end{aligned}$$

Meanings of variables and derivation of multipliers used in the above equations are as listed in paragraph 92.c. of the Consent Decree

**Steps taken to limit the duration and/or quantity of sulfur dioxide emissions**

Following the unit shutdowns, Power and Control personnel responded to the substation trip and had the operators turn off all breakers on the Substation 12E 480V bus. The 12E bus was then checked to verify the problem was not on the substation 480 Volt bus and then was reenergized. All loads fed from the 12E bus were then checked and if the load tested satisfactory it was returned to Operations for use.

During the event, process rates were reduced in other units.

212EM-314C was found to be faulted and a 480V ET panel was found with low resistance to ground readings. These 2 loads were left locked out for further investigation.

**Root Cause and significant contributing cause(s)**

The unplanned shutdown of the Unsaturated Gas Plant (Unit 212) was caused by:

This fault occurred due to one or both of the following reasons:

- The breaker for 212EM-314C failed and could not trip when called upon, thus activating the next level of safety protection (the associated substation 12E main bus breaker); the substation relay coordination worked as designed and the substation main breaker tripped when the motor breaker did not.
- The majority of the cooling fan motors are fed from substation 12E bus. There are pumps with the main and spare on the same bus.

**Measures to prevent a recurrence of a similar event and proposed corrective actions**

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1. Consider replacing a 480 Volt breaker after it trips on a fault condition with a new breaker. If parts are needed or the substation needs to be shut down to perform the work the breaker can be changed at the next opportunity.
2. Consider replacing the original 480 Volt breakers in Substations 12D and 12E with new breakers or testing these breakers for proper operation.
3. Consider organizing the loads such that half the fans are on each bus.
4. Consider organizing the pumps such that the A and B pumps are on separate busses.

**Action Commencement and Completion Dates**

Action	Commencement Dates [mm/yr]	Target Completion Date [mm/yr]	Completion Dates [mm/yr]
1.		9/1/2010	
2.		8/31/2010	
3.		10/31/2010	
4.		12/31/2010	

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**Appendix C**



**CITGO Petroleum Corporation  
Lemont Refinery  
Hydrocarbon Flaring Incident Summary – 05/23/2010  
RCA Completed 07/07/2010**

Incident Number: LE-HC-03-2010-052310

**Brief Description of Incident**

On May 23<sup>rd</sup> 2010, there was an electrical failure at the Lemont Refinery which resulted in a loss of power to the crude charge pumps, necessitating the subsequent shutdown of most of the South Plant and North Plant operating units and resulting in flaring from the 844C-1, 844C-2, and 844C-3 flares.

At approximately 1:15 p.m. on May 23, 2010 a ground fault occurred on a section of cable between the North Main Substation and the 28 A substation. Personnel responding to the substation found four breakers open. With these circuit breakers open, the North Main Bus 1A was isolated from power. With the isolation of Bus 1A, nine other substations were without power, resulting in the loss of the Crude Charge Pumps, North Plant Utilities, Unit 23, the Blend Center, and various Tank Farm Substations.

With the loss of power at Unit 23, the North Plant flare gas compressors, and crude charge pumps, it became necessary to shut down operating units and units began to intermittently relieve to the C-1, C-2, and C-3 flares due to the power loss at approximately 1:17 p.m. Electricians began to assess the situation, and after identifying the preliminary causes of the shutdown, temporary power to the substation was established to allow units to begin startup. Operators began to implement startup procedures, with the intermittent flaring ending May 24, 2010 at 3:44 a.m. at C-1 flare and at 1:42 p.m. at C-2 and C-3 flares. Also, at C-2 and C-3, over the approximately 25 hour event there were approximately 585 intermittent minutes of flaring; more than 90% of the intermittent flaring occurred during the initial 14 hours of the event.

**C-1**

<b>Incident Start Date:</b>	5/23/10	<b>Incident Start Time:</b>	13:26
<b>Incident End Date:</b>	5/24/10	<b>Incident End Time:</b>	03:44

<b>Estimated SO<sub>2</sub> Emissions:</b>	0.4 tons	<b>Estimated SO<sub>2</sub> Emission Rate:</b>	52.2 lbs/hr
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**C-2**

<b>Incident Start Date:</b>	5/23/10	<b>Incident Start Time:</b>	13:17
<b>Incident End Date:</b>	5/24/10	<b>Incident End Time:</b>	13:42

<b>Estimated SO<sub>2</sub> Emissions:</b>	0.9 tons	<b>Estimated SO<sub>2</sub> Emission Rate:</b>	77.5 lbs/hr
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**C-3**

<b>Incident Start Date:</b>	5/23/10	<b>Incident Start Time:</b>	13:17
<b>Incident End Date:</b>	5/24/10	<b>Incident End Time:</b>	13:42

<b>Estimated SO<sub>2</sub> Emissions:</b>	0.9 tons	<b>Estimated SO<sub>2</sub> Emission Rate:</b>	73.7 lbs/hr
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**CITGO Petroleum Corporation  
Lemont Refinery  
Hydrocarbon Flaring Incident Summary – 05/23/2010  
RCA Completed 07/07/2010**

**Calculations per Paragraph 92**

**C-1 flaring (5/23/2010 1:26 p.m. – 5/24/2010 3:44 a.m.)**

$$\begin{aligned}\text{Tons of SO}_2 \text{ Emitted} &= [\text{FR}][\text{TD}][\text{ConcH}_2\text{S}][8.44 \times 10^{-5}] \\ &= [21,023.9 \text{ SCFH}] [14.30 \text{ hrs}] [0.0147 \text{ scf H}_2\text{S/scf gas}] [8.44 \times 10^{-5}] = 0.4 \text{ Tons} \\ \text{Rate of SO}_2 \text{ emissions in lbs/hr} &= [\text{FR}][\text{ConcH}_2\text{S}][0.169] \\ &= [21,023.9 \text{ SCFH}] [0.0147 \text{ scf H}_2\text{S/scf gas}] [0.169] = 52.2 \text{ lbs of SO}_2/\text{hr}\end{aligned}$$

**C-2 flaring (5/23/2010 1:17 p.m. – 5/24/2010 1:42 p.m.)**

$$\begin{aligned}\text{Tons of SO}_2 \text{ Emitted} &= [\text{FR}][\text{TD}][\text{ConcH}_2\text{S}][8.44 \times 10^{-5}] \\ &= [24,931.7 \text{ SCFH}] [24.42 \text{ hrs}] [0.0184 \text{ scf H}_2\text{S/scf gas}] [8.44 \times 10^{-5}] = 0.9 \text{ Tons} \\ \text{Rate of SO}_2 \text{ emissions in lbs/hr} &= [\text{FR}][\text{ConcH}_2\text{S}][0.169] \\ &= [24,931.7 \text{ SCFH}] [0.0184 \text{ scf H}_2\text{S/scf gas}] [0.169] = 77.5 \text{ lbs of SO}_2/\text{hr}\end{aligned}$$

**C-3 flaring (5/23/2010 1:17 p.m. – 5/24/2010 1:42 p.m.)**

$$\begin{aligned}\text{Tons of SO}_2 \text{ Emitted} &= [\text{FR}][\text{TD}][\text{ConcH}_2\text{S}][8.44 \times 10^{-5}] \\ &= [23,435.9 \text{ SCFH}] [24.42 \text{ hrs}] [0.0186 \text{ scf H}_2\text{S/scf gas}] [8.44 \times 10^{-5}] = 0.9 \text{ Tons} \\ \text{Rate of SO}_2 \text{ emissions in lbs/hr} &= [\text{FR}][\text{ConcH}_2\text{S}][0.169] \\ &= [23,435.9 \text{ SCFH}] [0.0186 \text{ scf H}_2\text{S/scf gas}] [0.169] = 73.7 \text{ lbs of SO}_2/\text{hr}\end{aligned}$$

**Combined flaring (C-1, C-2, C-3 -- (5/23 11:31 a.m. – 5/26/2010 10:12 a.m.)**

$$\begin{aligned}\text{Tons of SO}_2 \text{ Emitted} &= [\text{FR}][\text{TD}][\text{ConcH}_2\text{S}][8.44 \times 10^{-5}] \\ &= [60,678.9 \text{ SCFH}] [24.42 \text{ hrs}] [0.0177 \text{ scf H}_2\text{S/scf gas}] [8.44 \times 10^{-5}] = 2.2 \text{ Tons} \\ \text{Rate of SO}_2 \text{ emissions in lbs/hr} &= [\text{FR}][\text{ConcH}_2\text{S}][0.169] \\ &= [60,678.9 \text{ SCFH}] [0.0177 \text{ scf H}_2\text{S/scf gas}] [0.169] = 181.5 \text{ lbs of SO}_2/\text{hr}\end{aligned}$$

Meanings of variables and derivation of multipliers used in the above equations are as listed in paragraph 92.c. of the Consent Decree

**Steps taken to limit the duration and/or quantity of sulfur dioxide emissions**

C-1:

With the loss of power at the North Plant Substation at 1:15 p.m. flaring due to the loss of power began at approximately 1:26 p.m. Units in the North Plant were then shutdown following standard procedures for unplanned shutdowns.

C-2, C-3:

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Lemont Refinery  
Hydrocarbon Flaring Incident Summary – 05/23/2010  
RCA Completed 07/07/2010**

With the loss of crude due to the loss of power at the North Main Substation, units began shutting down following standard procedures for unplanned shutdowns.

General:

Following the unit shutdowns, Power and Control personnel responded to the substation trip. Over approximately a 12-hour period, Substation 31E was manually energized, and the North Main Substation Bus 1A reenergized, Feeder 212 reenergized (restoring power to the North Plant Utilities and Unit 123), Feeder 215 reenergized (restoring power to the Blend Center), and temporary generators connected to Substations 31S and 31T (restoring power to the Bulk Rack and ISAL cold feed pumps).

Standard startup procedures were followed during the re-start, with intermittent flaring occurring.

The 31S and 31T substations were left connected to temporary generators while a more thorough investigation was conducted.

**Root Cause and significant contributing cause(s)**

The following are significant contributing causes of the unplanned shutdown of the North Main Substation:

- Feeder 213 experienced a ground fault on the section of cable that runs from the North Main Substation to 28A substation.
- The ground fault relay on Feeder 213 did not activate and therefore did not take this feeder off line.
- Substation 31E could not transfer because the main breaker 31E1 was installed incorrectly.

**Measures to prevent a recurrence of a similar event and proposed corrective actions**

1. Consider developing a replacement program for the Paper Insulated Lead Cables (PILC) in the refinery
2. Consider updating the Feeder Preventive Maintenance program to include verifying the Electrical System Protection Relays operate correctly by using current injection.

**CITGO Petroleum Corporation  
Lemont Refinery  
Hydrocarbon Flaring Incident Summary – 05/23/2010  
RCA Completed 07/07/2010**

- |   |
|---|
| 3. Consider updating distribution system re-energization procedures with a step to verify the breakers are installed correctly and the springs are charged. |
|---|

**Action Commencement and Completion Dates**

Action	Commencement Dates [mm/yr]	Target Completion Date [mm/yr]	Completion Dates [mm/yr]
1.	6/28/2010	1/31/2011	
2.	6/28/2010	9/26/2010	
3.	6/28/2010	3/1/2011	

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**Appendix D**

**CITGO Petroleum Corporation  
Lemont Refinery  
Hydrocarbon Flaring Incident Summary – 06/18/2010  
RCA Completed 08/02/2010**

Incident Number: LE-HC-04-2010-061810

**Brief Description of Incident**

On the afternoon of June 18<sup>th</sup> 2010, electrical failures throughout the electrical company's grid occurred due to severe wind and thunderstorms swept through the area during the afternoon. Numerous local areas reported loss of power. A resultant line-fault on the electrical company's power grid caused power fluctuations within the refinery.

At approximately 3:54 p.m. the South Plant Flare Gas recovery compressor tripped off line due to the power fluctuations, resulting in flaring from the 844C-3 flare. When the power stabilized the compressor was re-started, ending the flaring at 5:17 p.m.

<b>Incident Start Date:</b>	6/18/10	<b>Incident Start Time:</b>	15:54
<b>Incident End Date:</b>	6/18/10	<b>Incident End Time:</b>	17:17

<b>Estimated SO<sub>2</sub> Emissions:</b>	0.7 tons	<b>Estimated SO<sub>2</sub> Emission Rate:</b>	979.2 lbs/hr
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**Calculations per Paragraph 92**

**C-3 flaring (6/18/2010 3:54 p.m. – 6/18/2010 5:17 p.m.)**

$$\text{Tons of SO}_2 \text{ Emitted} = [\text{FR}][\text{TD}][\text{ConcH}_2\text{S}][8.44 \times 10^{-5}]$$

$$= [65,543.2 \text{ SCFH}] [1.38 \text{ hrs}] [0.0884 \text{ scf H}_2\text{S/scf gas}] [8.44 \times 10^{-5}] = 0.9 \text{ Tons}$$

$$\text{Rate of SO}_2 \text{ emissions in lbs/hr} = [\text{FR}][\text{ConcH}_2\text{S}][0.169]$$

$$= [65,543.2 \text{ SCFH}] [0.0884 \text{ scf H}_2\text{S/scf gas}] [0.169] = 979.2 \text{ lbs of SO}_2/\text{hr}$$

Meanings of variables and derivation of multipliers used in the above equations are as listed in paragraph 92.c. of the Consent Decree

**Steps taken to limit the duration and/or quantity of sulfur dioxide emissions**

When the power fluctuation ended, efforts were made to re-start the compressor. The lube-oil shutdown switch was bypassed and repeated efforts were made to re-start the compressor.

**Root Cause and significant contributing cause(s)**

There were two root causes associated with this event.

1. The power fluctuations were attributed to problems with the third-party power provider's grid, and not under the control of the refinery.

**CITGO Petroleum Corporation  
Lemont Refinery  
Hydrocarbon Flaring Incident Summary – 06/18/2010  
RCA Completed 08/02/2010**

- |   |
|---|
| 2. Operators had difficulty re-starting the compressor. |
|---|

**Measures to prevent a recurrence of a similar event and proposed corrective actions**

- |   |
|---|
| <ol style="list-style-type: none"><li>1. No refinery measures are necessary.</li><li>2. Implement further training of operators as to specific steps to take to restart the compressor, emphasizing three restart steps (Lube-oil Shutdown Bypass, High Vibration Shutdown Reset, and Start).</li></ol> |
|---|

**Action Commencement and Completion Dates**

Action	Commencement Dates [mm/yr]	Target Completion Date [mm/yr]	Completion Dates [mm/yr]
1. No refinery measures are necessary.			
2.	7/8/2010		7/8/2010

**Stipulated penalty determination statement**

The stipulated penalty determination statement is not required for the 6/18/2010 Hydrocarbon Flaring Incident.

**Lemont Refinery  
CITGO Petroleum Corporation  
Tail Gas Flaring RCFA Summary  
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<b>Incident Date</b>	<b>Incident Number</b>	<b>RCFA Completed</b>	<b>Corrective Action Completion Date</b>	<b>Corrective Action Expected Completion Date</b>	<b>Comments</b>
4/29/2010	LE-TG-01-2010-042910	6/15/2010		12/31/2010	see Appendix E



Lemont Refinery  
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**Appendix E**

**CITGO Petroleum Corporation  
Lemont Refinery  
Tail Gas Incident Summary – 04/29/2010  
RCA Completed 06/15/2010**

Incident Number: LE-TG-01-2010-042910

**Brief Description of Incident**

On April 29<sup>th</sup> 2010, Lemont Refinery experienced an incident that resulted in excess emissions sulfur dioxide (SO<sub>2</sub>) at 121 C-train. The incident was related to an event which involved an electrical failure which shutdown the Unsaturated Gas Plant (Unit 212) and caused intermittent flaring from the 844C-2 and 844C-3 flare. Due to the resultant changes in loads on the refinery sulfur recovery trains one of the sulfur trains was shutdown. When the Unit 212 was re-started and loads began to increase, during the process of starting up the train that was shut down 121 C-train experienced excess sulfur dioxide (SO<sub>2</sub>) emissions.

At approximately 8:17 p.m. on 4/29/10 the FCC board received a substation alarm associated with the Unsaturated Gas Plant (Unit 212). The outside operator went to investigate. The outside operator went to Substation 12D/E and found that Substation 12E had a ground fault. The alarm was acknowledged and shortly after that Substation 12E's Main Breaker tripped. When Substation 12E tripped loads running on that substation were lost; this included the majority of the six 212E-314 debutanizer reflux condensers (overhead fin fans). With the loss of most of the 21E-314 cooling fans, the unit relieved to the 844C-2 and 844C-3 flares, beginning at approximately 8:21 p.m.

Process rates elsewhere in the refinery were reduced to a level where loads on the four sulfur trains were below minimum operating levels, so one train (121 D-train) was taken off-line.

Electricians were called to assess the situation. After identifying the cause of the shutdown, electricians evaluated the substation and associated loads to ensure that the unit could be re-started. Operators began to implement existing startup procedures, with the intermittent flaring ending at 9:38 p.m.

When Unit 212 was re-started, the sulfur train that had been shut down (121 D-train) was not able to start up promptly. This resulted in the load to the 121 C-train increasing, and caused excess SO<sub>2</sub> emissions from the 121 C-train tail-gas oxidizer.

**121 C-train**

<b>Incident Start Date:</b>	4/29/10	<b>Incident Start Time:</b>	20:21
<b>Incident End Date:</b>	4/29/10	<b>Incident End Time:</b>	21:38

<b>Estimated SO<sub>2</sub> Emissions:</b> 3158.9 lb
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**CITGO Petroleum Corporation  
Lemont Refinery  
Tail Gas Incident Summary – 04/29/2010  
RCA Completed 06/15/2010**

**Calculations per Paragraph 93(b)(ii)**

**121 C-train excess emissions (4/29/2010 10:00 p.m. – 4/30/2010 09:59 a.m.)**

$$ER_{TGI} = \sum_{i=1}^{TD_{TDI}} [FR_{Inc.}]_i [Conc. SO_2 - 250]_i \left[ 0.169 \times 10^{-6} \left[ \frac{20.9 - \%O_2}{20.9} \right]_i \right]$$

$TD_{TDI} = 13$  hours

i	Date/Time	Conc. SO <sub>2</sub> (ppmvd, 0%O <sub>2</sub> , 12-hr avg)	1-hr avg. data			ER <sub>i</sub> (lb SO <sub>2</sub> )
			FR <sub>Inc</sub> (scfh, db)	Conc. SO <sub>2</sub> (ppmvd, 0%O <sub>2</sub> )	%O <sub>2</sub> (volume %, db)	
0	4/29 21:00	94.2		92.1		
1	4/29 22:00	1,619.6	590,362.92	18,396.4	2.67	1,579.2
2	4/29 23:00	2,831.6	716,072.77	14,643.2	2.38	1,543.5
3	4/30 00:00	2,882.0	613,725.18	700.9	4.73	36.2
4	4/30 01:00	2,890.1		190.6		
5	4/30 02:00	2,892.1		114.4		
6	4/30 03:00	2,892.3		97.6		
7	4/30 04:00	2,891.9		95.3		
8	4/30 05:00	2,891.6		92.8		
9	4/30 06:00	2,891.6		90.5		
10	4/30 07:00	2,891.4		90.1		
11	4/30 08:00	2,891.1		88.8		
12	4/30 09:00	2,890.6		87.0		
13	4/30 10:00	1,364.8		86.7		
	4/30 11:00	151.9		87.9		
ER <sub>TGI</sub>						3,158.9

ER<sub>TGI</sub> = 3,159 pounds of SO<sub>2</sub>

Meanings of variables and derivation of multipliers used in the above equations are as listed in paragraph 93.b.ii of the Consent Decree

**Steps taken to limit the duration and/or quantity of sulfur dioxide emissions**

Following the Unit 121 shutdown, Power and Control personnel responded to the substation trip and had the operators turn off the breakers on the Substation 12E 480V bus. The 12E bus was then checked to verify the problem was not on the substation 480 Volt bus and then was reenergized. All loads fed from the 12E bus were then checked and if the load tested satisfactory it was returned to Operations for use.

Prior to the event, process rates were reduced in other units, and load had been reduced to the sulfur recovery trains such that all four of the trains were operating below minimum

212EM-314C was found to be faulted and a 480V ET panel was found with low resistance to

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Tail Gas Incident Summary – 04/29/2010  
RCA Completed 06/15/2010**

ground readings. These 2 loads were left locked out for further investigation.

During Unit 212 start-up result up, changes were made slowly to Unit 121 C-train to get the train back on ratio, and attempts were made to re-start 121 D-train.

**Root Cause and significant contributing cause(s)**

The excess emissions at 121 C-train were due to two causes– a delay in restarting the Unit 121 D-train and the unplanned shutdown of the Unsaturated Gas Plant.

The delay in restarting Unit 121 D-train was due to:

- A new low-flow trip level had not been communicated.

The unplanned shutdown of the Unsaturated Gas Plant (Unit 212) was due to lack of cooling in the unit due to a breaker fault

This fault occurred due to one or both of the following reasons:

- The breaker for 212EM-314C failed and could not trip when called upon, thus activating the next level of safety protection (the associated substation 12E main bus breaker); the substation relay coordination worked as designed and the substation main breaker tripped when the motor breaker did not.
- The majority of the cooling fan motors are fed from substation 12E bus. There are pumps with the main and spare on the same bus.

**Measures to prevent a recurrence of a similar event and proposed corrective actions**

1. Management of Change procedures were modified to add an additional intermediate review and notification step that is unique to Process Control and covers alarm management changes.
2. Consider replacing a 480 Volt breaker after it trips on a fault condition with a new breaker. If parts are needed or the substation needs to be shut down to perform the work the breaker can be changed at the next opportunity.
3. Consider replacing the original 480 Volt breakers in Substations 12D and 12E with new breakers or testing these breakers for proper operation.
4. Consider organizing the loads such that half the fans are on each bus.
5. Consider organizing the pumps such that the A and B pumps are on separate busses.

**CITGO Petroleum Corporation  
Lemont Refinery  
Tail Gas Incident Summary – 04/29/2010  
RCA Completed 06/15/2010**

**Action Commencement and Completion Dates**

Action	Commencement Dates [mm/yr]	Target Completion Date [mm/yr]	Completion Dates [mm/yr]
1.	May 2010		May 2010
2.		9/1/2010	
3.		8/31/2010	
4.		10/31/2010	
5.		12/31/2010	

**CITGO Petroleum Corporation  
Lemont Refinery  
Tail Gas Incident Summary – 04/29/2010  
RCA Completed 06/15/2010**

**Stipulated penalty determination statement**

The stipulated penalty determination statement is not required for the 4/29/2010 Tail Gas Incident.

Lemont Refinery  
CITGO Petroleum Corporation  
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January 1, 2010 – June 30, 2010

**Attachment 7**

**BWON EOL**

Sample Number	Equipment Description	Controlled/Uncontrolled	Percent Aqueous	Percent Organic	Hydrocarbon Specific Gravity	Benzene Concentration Aqueous (mg/L)	Benzene Concentration Organic (mg/kg)	Total Benzene in Waste (ppmw)	Volume (gal/qtr)	6.0 Mg Compliance Option	Type of Sample
North Plant											
13	Udex Lift Station Unit -122	Uncontrolled	100	0.00	0.728	1.052	0.00	1.052	6,939,112	0.02763	End of Line
14	Cat Reformer #1 Unit 123 Lift Station	Uncontrolled	89.10	10.90	0.728	0.011	0.00	0.011	6,939,112	0.00026	End of Line
12	Solvent Truck Rack Lift Station	Uncontrolled	100	0.00	0.728	0.000	0.00	0.000	6,939,112	0.00000	End of Line
20	South French Drain Lift Pump	Uncontrolled	99.37	0.63	0.728	0.007	0.00	0.007	691,805	0.00002	End of Line
21	North French Drain Lift Pump	Uncontrolled	100	0.00	0.728	0.005	0.00	0.005	1,424,304	0.00003	End of Line
16	Needle Coker Lift Pumps	Uncontrolled	87.94	12.06	0.728	0.116	24.56	0.155	6,939,112	0.05927	>0.05 Mg/yr
TK 003	Tank 3 Water	Uncontrolled	100	0.00	0.795	0.000	100	0.000	2,013,354	0.00000	End of Line
GRW-1, 2	Groundwater	Uncontrolled	100	0.00	0.000	0.000	0.00	0.000	11,351	0.00000	End of Line
GQ-MW-2A	Groundwater	Uncontrolled	100	0.00	0.000	0.000	0.00	0.000	366,245	0.00000	End of Line
South Plant											
1	U212 + cleaning pad	Uncontrolled	97.96	2.0	0.728	0.111	0.00	0.111	8,120,683	0.00334	End of Line
2	U-112	Uncontrolled	100	0.0	0.728	0.138	0.00	0.138	8,120,683	0.00424	End of Line
3	U-217	Uncontrolled	100	0.00	0.728	0.000	0.00	0.000	8,120,683	0.00000	End of Line
4	U-111	Uncontrolled	93.06	6.94	0.728	0.136	0.00	0.14	8,120,683	0.00389	End of Line
5	U-111	Uncontrolled	93.40	6.60	0.728	2.274	147.78	39.380	8,120,683	0.28333	End of Line
6	U-13	Uncontrolled	100	0.0	0.728	0.196	0.00	0.196	8,120,683	0.00602	End of Line
7	U-15/25	Uncontrolled	100	0.0	0.728	0.066	0.00	0.066	8,120,683	0.00203	End of Line
8	U-14/16	Uncontrolled	100	0.0	0.728	0.018	0.00	0.018	8,120,683	0.00055	End of Line
9	Maintenance/cleaning pad	Uncontrolled	100	0.0	0.728	0.188	0.00	0.188	8,120,683	0.00578	End of Line
10	Laboratory	Uncontrolled	100	0.0	0.728	0.798	0.00	0.798	8,120,683	0.02453	End of Line
11	U102	Uncontrolled	100	0.0	0.728	0.028	0.00	0.028	8,120,683	0.00086	End of Line
46	U103/104	Uncontrolled	100	0.0	0.728	0.019	0.00	0.019	8,120,683	0.00058	End of Line
38	Tank 433 Water to sewer	Uncontrolled	100	0.0	0.728	3.483	0.00	3.48	1,296,000	0.01709	>0.05 Mg/yr
43	Tank 434 Water to sewer	Uncontrolled	100	0.0	0.728	6.467	0.00	6.47	0	0.00000	End of Line
NA	Blend Center Pit	Uncontrolled	100	0.00	0.728	0.080	10,380	0.08	518,400	0.00016	End of Line
37	B&T Coker Road Lift Station	Uncontrolled	100	0.00	0.728	0.74	0.00	0.7	133,875.9	0.00038	End of Line
										Total Annual Benzene	0.4400



[illegible]

Lemont Refinery  
CITGO Petroleum Corporation  
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**Attachment 8**

**LDAR Issues Summary**

CITGO Petroleum Corporation  
Lemont Refinery  
Semi-Annual report  
January 1, 2010 - June 30, 2010

**SUMMARY OF LDAR ISSUES IN 1st HALF 2010 NSR CONSENT DECREE REPORT**

**Late initial repair attempt, late initial re-monitoring**

Pumps (in light liquid service) and Valves (in light liquid and/or gas vapor service, and other than pressure relief devices) leaking at Internal Leak Threshold and with no initial repair attempt and/or re-monitoring within 5 days of initial detection

Compliance Group	Tag	Class	Date Reported	First Attempt Due Date	Initial Repair Date	Initial Retest Date	Issue	Note
No Pumps (in light liquid service) and Valves (in light liquid and/or gas vapor service, and other than pressure relief devices) leaking at Internal Leak Threshold had, within 5 days of initial detection, no initial repair attempt and/or re-monitoring.								

**Pumps (in light liquid service) and Valves (in light liquid and/or gas-vapor service, and other than pressure relief devices) leaking above internal threshold not repaired within 30 days or placed on Delay of Repair List**

Compliance Group	Tag	Class	Date Reported	Effective Repair Due Date	Actual Repair Date		Issue	Note
No Pumps (in light liquid service) and Valves (in light liquid and/or gas-vapor service, and other than pressure relief devices) leaking above internal threshold were, within 30 days of detection, not repaired or placed on Delay of Repair List or removed from service.								

**Late placement on DOR (> 30 days after initial inspection) during reporting period.**

Compliance Group	Tag	Class	Initial Inspection Date	DOR deadline	Date placed on Delay of Repair		Issue	Note
No pumps or valves were placed on Delay of Repair (DOR) more than 30 days after initial inspection during reporting period.								

**Late Initial Repair Threshold Attempt (leakers w/ leak rate > 200 ppmv but < 500 ppmv, w/ no repair/remonitor w/in 5 days of initial inspection)**

Compliance Group	Tag	Class	Initial Inspection Date	Repair/Remonitor Deadline	Initial Repair Attempt Date	Initial Remonitor Date	Issue	Note
There were no Initial Repair Threshold Attempts (leakers w/ leak rate > 200 ppmv but < 500 ppmv) that were more than 5 days after the initial inspection.								

**3rd Party LDAR Audit Issues**

No LDAR Audit was conducted during the reporting period.

Lemont Refinery  
CITGO Petroleum Corporation  
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**Attachment 9**

**LDAR**

**ATTACHMENT 9, Appendix A**  
**Difficult-to-Monitor Equipment**  
**[130(b)(v)]**

**Lemont Refinery**  
**CITGO Petroleum Corporation**  
**Semi-Annual Report**  
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Unit	Description	No. of LL/GV DTM pieces of equipment monitored during reporting period	Note
102	FCC Gasoline Hydrotreater	25	
103	Gasoline hydrotreater	23	
106	Coker 2 - vacuum		Has no LL or GV DTMs
107	Coker 2 - hydrotreater	1	
108	Coker 2 - coker	3	
109	Coker 2 - H2 unit		Has no DTMs
111	Crude	72	
112	FCC	6	
113	Sponge coker	32	
114	Naphtha hydrotreater	17	
115	Lt. Distillate Hydrotreater	10	
116	CRU No. 2	21	
118	Unisar	12	
119	SRU -119	9	
120	Alky	40	
121	SRU - 121	2	
122	UDEX	14	Includes HON valves and connectors
123	CRU No. 1	62	
125	Diesel hydrotreater	23	
153	Inter-unit pipe-way	242	
212	Unsat gas plant	44	
217	Sat gas plant	11	
228	Blend Center	38	
331	Tank Farm	116	Includes HON valves and connectors
333	Canal Dock	3	Includes HON valves and connectors
334	Santa Fe Car Rack	1	
335	Fuels Rack	42	
337	IC Tank Car Rack		Has no DTMs
338	Solvents Truck Rack		Has no DTMs
430	Water Treaters	5	
844	Waste water treatment/flares	80	
Total		954	

**ATTACHMENT 9, Appendix B**  
**LDAR Monitoring Schedule [130(b)(vi)]**

**Lemont Refinery**  
**CITGO Petroleum Corporation**  
**Semi-Annual Report**  
**January 1, 2010 - June 30, 2010**

Unit	Description	<b>Month-of-the-Quarter LDAR Monitoring Schedule</b>											
		1st quarter			2nd quarter			3rd quarter			4th quarter		
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
102	Gasoline hydrotreater			•			•			•			•
103	LSR Hydrotreater/Gasoline hydrotreater			•			•			•			•
106	Coker 2-vacuum			•			•			•			•
107	Coker 2 - hydrotreater			•			•			•			•
108	Coker 2 - coker			•			•			•			•
109	Coker2 - H2 (PSA)			•			•			•			•
111	Crude		•			•			•			•	
112	FCC			•			•			•			•
113	Sponge coker			•			•			•			•
114	Naphtha hydrotreater			•			•			•			•
115	Lt. Distillate Hydrotreater		•			•			•			•	
116	CRU No. 2			•			•			•			•
118	Unisar		•			•			•			•	
119	SRU -119		•			•			•			•	
120	Alky			•			•			•			•
121	SRU - 121		•			•			•			•	
122	UDEX	•			•			•	TBD	TBD	•	TBD	TBD
123	CRU No. 1		•			•			•			•	
125	Diesel hydrotreater		•			•			•			•	
153	Inter-unit pipe-way		•			•			•			•	
212	Unsat gas plant			•			•			•			•
217	Sat gas plant	•			•			•			•		
228	Blend Center		•			•			•			•	
331	Tank Farm	•			•			•			•		
333	Canal Dock	•			•			•			•		
334	Santa Fe Car Rack		•			•			•			•	
335	Fuels Rack		•			•			•			•	
337	IC Tank Car Rack	•			•			•			•		
338	Solvents Truck Rack	•			•			•			•		
430	Water Treaters		•			•			•			•	
590	Ultra Low Sulfur Diesel Hydrotreater	Unit 590 is a new unit; startup is anticipated in July 2010							•	•		•	
844	Waste water treatment/flare		•			•			•			•	
All units: LL pumps		•	•	•	•	•	•	•	•	•	•	•	•

The above schedule reflects the general period when the bulk of a unit's valves are to be monitored. Some components in units may not fall within the unit's general monthly schedule for a variety of reasons, including (but not limited to): being on follow-up re-monitor schedule, recently added and thus on a different schedule based on when they were added, on an annual monitoring frequency due to being "Difficult to Monitor", or shifted to or from a monthly monitoring schedule depending on HON leak rate. TBD ("To Be Determined") reflects the uncertainty regarding whether HON components will be on monthly or quarterly monitoring, depending on prior monitoring results.

**Lemont Refinery**  
**CITGO Petroleum Corporation**  
**Semi-Annual Report**  
**January 1, 2010 - June 30, 2010**

**Delay of Repair List**

This is a list of those items currently on the Delay of Repair list (as of end of reporting period), placed there since February 28, 2006.

Component Number	Type	Description	Initial Inspection Date	Concentration (ppmv)	Date leaking > 10,000 ppmv	For valves leaking > 10,000 ppmv				Date placed on Delay of Repair	Placed on Delay of Repair by Unit Supervisor w/in 30 days?	Is LDAR monitoring continuing while on Delay of Repair	For pumps, were best efforts used to isolate and repair?
						Repair Method	Monitoring results	Date of repair	If injection or equivalent, timely? (i.e., injection or equivalent within 30 days)				
0102NSPSLL00186	VALVE	CONTROL VALVE 102FV-110, N SIDE OF 102E-2C	04/05/2007	844	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	04/16/2007	TIMELY	Yes	NA
0102NSPSLL00235	VALVE	CONTROL VALVE 102FV-618, W of PUMP 102G-8A	09/17/2007	9,286	10/01/2007	Steam packing	3,966	09/17/2007	TIMELY	10/01/2007	TIMELY	Yes	NA
						Tighten packing	3,966	09/20/2007	TIMELY				
						Tighten packing	28,300	10/01/2007	TIMELY				
						Control valve - can not inject							
0102NSPSLL00435	VALVE	W SIDE OF E-28B AT CONTROL LOOP	06/06/2007	2,027	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	06/19/2007	TIMELY	Yes	NA
0102NSPSLL00482	VALVE	AT PUMP 102G-22B OH CHK	06/06/2008	1,004	06/18/2008	Tighten flange	672	06/06/2008	TIMELY	06/21/2008	TIMELY	Yes	NA
						Previous repair	531	06/10/2008	TIMELY				
						Tighten flange	1,205	06/12/2008	TIMELY				
						Applied sealant	557	06/14/2008	TIMELY				
						Previous repair	53,000	06/18/2008	TIMELY				
						Replaced	8,578	06/21/2008	TIMELY				
						Leak source was flange -- not injectable.							
0102NSPSLL00593	RELIEF	PRV 102SV-4033, LANDING ABOVE 102E-20 LADDER TO SE	09/08/2009	1,815	NA	Not a Valve	Not a Valve	Not a Valve	Not a Valve	09/23/2009	TIMELY	Yes	NA
0102NSPSLL00797	VALVE	S OF PUMP 102G-2a IN PIPE ROW 15 FT OH LPB	06/06/2008	978	06/12/2008	Steam fitting	5,398	06/06/2008	TIMELY	06/21/2008	TIMELY	Yes	NA
						Tighten fitting	1,082	06/10/2008	TIMELY				
						Tighten fitting	51,900	06/12/2008	TIMELY				
						Applied sealant	1,335	06/14/2008	TIMELY				
						Previous repair	629	06/18/2008	TIMELY				
						Applied sealant	1,707	06/20/2008	TIMELY				
						Previous repair	1,599	06/21/2008	TIMELY				
						Leak source was screwed fitting on valve, not injectable							
0102NSPSLL00826	VALVE	S OF PUMP 102G-2A IN PIPE ROW 15 FT OH LPB	03/20/2008	1,151	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	04/03/2008	TIMELY	Yes	NA
0102NSPSLL00862	VALVE	S AT 102E-9	04/01/2009	10,900	04/01/2009	Tighten bonnet	19800	04/01/2009	TIMELY	04/15/2009	TIMELY	Yes	NA
						Tighten	2828	04/03/2009	TIMELY				
						Previous repair	4896	04/06/2009	TIMELY				
						Tighten	5139	04/07/2009	TIMELY				
						Inject	28200	04/09/2009	TIMELY				
						Previous repair	1301	04/14/2009	TIMELY				
						Applied sealant	25900	04/15/2009	TIMELY				
0102NSPSLL01052	VALVE	N SIDE OF E-1C	12/12/2006	419	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	12/27/2006	TIMELY	Yes	NA
0102NSPSLL01082	VALVE	CTL N OF E-1B	12/12/2006	699	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	12/27/2006	TIMELY	Yes	NA
AVO-0090	CONNECT	BOTTOM FLANGE OF 102E-13	09/15/2008	100,000	09/15/2008	Not a valve	Not a valve	Not a valve	Not a Valve	09/18/2008	TIMELY	Yes	NA
0103NSPSGV00085	VALVE	CTV TV-87 E SIDE OF E-1C	06/20/2008	4,625	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	06/27/2008	TIMELY	Yes	NA

**ATTACHMENT 9, Appendix C**  
**Delay of Repair Information**  
**[130(b)(vii)]**

**Lemont Refinery**  
**CITGO Petroleum Corporation**  
**Semi-Annual Report**  
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**Delay of Repair List**

This is a list of those items currently on the Delay of Repair list (as of end of reporting period), placed there since February 28, 2006.

This is a list of those items currently on the Delay of Repair list (as of end of reporting period), placed there since February 28, 2006.													
Component Number	Type	Description	Initial Inspection Date	Concentration (ppmv)	Date leaking > 10,000 ppmv	For valves leaking > 10,000 ppmv				Date placed on Delay of Repair	Placed on Delay of Repair by Unit Supervisor w/in 30 days?	Is LDAR monitoring continuing while on Delay of Repair	For pumps, were best efforts used to isolate and repair?
						Repair Method	Monitoring results	Date of repair	If injection or equivalent, timely? (i.e., injection or equivalent within 30 days)				
0103NSPSGV00437	VALVE	SW SIDE OF F-6 OH	03/04/2008	10,800	03/04/2008	Tighten plug	18,800	03/04/2008	TIMELY	03/18/2008	TIMELY	Yes	NA
						Previous repair	36,800	03/05/2008	TIMELY				
						Tighten plug	25,800	03/06/2008	TIMELY				
						Previous repair	34,700	03/15/2008	TIMELY				
						Leak source wa a plug, not injectable							
0103NSPSLL00131	VALVE	ON CTL HV-947 W SIDE OF D-46 1ST LVL	05/26/2008	938	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	06/08/2006	TIMELY	Yes	NA
0103NSPSLL00206	VALVE	CTV FV-125 W OF 103E-17B	03/03/2009	30,800	03/03/2009	Steam packing	1307	03/03/2009	TIMELY	03/18/2009	TIMELY	Yes	NA
						Attempted Isolation	20700	03/18/2009	TIMELY				
						Control valve - can not inject.							
						Unable to isolate due to block valve leaking through							
0103NSPSLL00311	VALVE	NE SIDE OF G-4A	03/03/2008	67,200	03/03/2008	Tighten packing	9,588	03/03/2008	TIMELY	03/18/2008	TIMELY	Yes	NA
						Tighten packing	23,900	03/06/2008	TIMELY				
						Previous repair	222,400	03/15/2008	TIMELY				
						Previous repair	6,104	03/17/2008	TIMELY				
						Inject	2,193	03/18/2008	TIMELY				
						Re-inject	1,099	03/18/2008	TIMELY				
0103NSPSLL00446	VALVE	W BATTERY LIITS UNDER CATWALSK CHK	06/24/2008	4,261	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	07/09/2008	TIMELY	Yes	NA
0108NSPSGV00286	RELIEF	PRV SV-400 1ST LANDING OF 8D-44 W SIDE OVER RAIL	04/16/2009	19,900	04/16/2009	Not a Valve	Not a Valve	Not a Valve	Not a Valve	05/01/2009	TIMELY	Yes	NA
0111NSPSGV00428	RELIEF	PRV ON TOP OF F-2	11/07/2006	2,216	11/09/2006	Tighten bonnet	13,100	11/09/2007	NA	11/16/2006	TIMELY	Yes	NA
						Previous repair	2,250	11/13/2007	NA				
						Tighten packing	3,813	11/14/2007	NA				
						Previous repair	1,485	11/15/2007	NA				
						Relief Valve - injection not appropriate							
0111NSPSGV00920	VALVE	CONTROL VALVE 11PV-311. F-2 LINE TO FURNACE AT E SIDE OF F-6 ABOVE E-SIDE OF FURNACES	07/11/2007	127,000	07/11/2007	Steam packing	100,000	07/13/2007	NA	07/31/2007	TIMELY	Yes	NA
						Previous repair	120,100	07/26/2007	NA				
						Previous repair	100,000	07/30/2007	NA				
						Control valve - can not inject							
15253 (formerly tag no. 0111NSPSLL00315)	VALVE	ON STRUCT TOP OF EXCH DECK AT 11E-1A TOP	08/31/2006	875	09/08/2006	Tighten packing	24,400	09/08/2007	TIMELY	09/15/2006	TIMELY	Yes	NA
						Tighten packing	2,071	09/08/2007	TIMELY				
						Tighten packing	1,684	09/14/2007	TIMELY				
						Tighten packing	2,000	09/15/2007	TIMELY				
0112NSPSGV00240	VALVE	TOP OF 112G-1A, 2ND LANDING, E SIDE OF BATTERY LIMITS	12/20/2007	2,411	12/20/2007	Steam seal	100,000	12/21/2007	TIMELY	01/04/2007	TIMELY	Yes	NA
						Tighten packing	1,394	01/02/2007	TIMELY				
0112NSPSLL00348	VALVE	OVER G-1A BATTERY LIMITS 1ST LANDING AT E SIDE BATTERY LIMITS OVER RAIL	07/13/2009	7,378	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	07/28/2009	TIMELY	Yes	NA



**ATTACHMENT 9, Appendix C**  
**Delay of Repair Information**  
**[130(b)(vii)]**

**Lemont Refinery**  
**CITGO Petroleum Corporation**  
**Semi-Annual Report**  
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**Delay of Repair List**

This is a list of those items currently on the Delay of Repair list (as of end of reporting period), placed there since February 28, 2006.

Component Number	Type	Description	Initial Inspection Date	Concentration (ppmv)	Date leaking > 10,000 ppmv	For valves leaking > 10,000 ppmv				Date placed on Delay of Repair	Placed on Delay of Repair by Unit Supervisor w/in 30 days?	Is LDAR monitoring continuing while on Delay of Repair	For pumps, were best efforts used to isolate and repair?
						Repair Method	Monitoring results	Date of repair	If injection or equivalent, timely? (i.e., injection or equivalent within 30 days)				
0114NSPSGV00042	VALVE	10 FT HIGH, W SIDE OF B-2 FURNACE	06/06/2007	1,254	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	08/19/2007	TIMELY	Yes	NA
0114NSPSGV00179	VALVE	W SIDE OF FURNACE B-1, 10 FT OH	06/06/2007	720	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	06/19/2007	TIMELY	Yes	NA
0114NSPSGV00190	VALVE	S SIDE OF D-1 REACTOR	08/01/2006	686	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	08/15/2006	TIMELY	Yes	NA
0114NSPSGV00191	VALVE	BOTTOM OF 14-D1 REACTOR	12/06/2006	596	12/15/2006	Tighten	1,624	12/06/2006	TIMELY	12/21/2006	TIMELY	Yes	NA
						Tighten plug	2,312	12/08/2006	TIMELY				
						Sealant	100,000	12/15/2006	TIMELY				
						Sealant	1,579	12/18/2006	TIMELY				
						Previous repair	17,900	12/20/2006	TIMELY				
						Previous repair	16,700	12/21/2006	TIMELY				
0114NSPSGV00203	VALVE	TOP OF D-3 TOWER	09/28/2007	834	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	10/12/2007	TIMELY	Yes	NA
0114NSPSGV00205	VALVE	TOP OF D-3 TOWER, HPB	09/21/2007	599	09/26/2007	Tighten packing	6,764	09/21/2007	TIMELY	10/05/2007	TIMELY	Yes	NA
						Tighten valve flange	102,700	09/26/2007	TIMELY				
						Tighten valve flange	2,183	09/28/2007	TIMELY				
						Sealant	15,800	10/02/2007	TIMELY				
						Leak source is valve flange - not injectable							
0114NSPSGV00250	VALVE	N SIDE OR E-3C, LPB	09/20/2007	533	09/22/2007	Tighten plug	753	09/20/2008	TIMELY	10/05/2007	TIMELY	Yes	NA
						Tighten plug	10,200	09/22/2008	TIMELY				
						Tighten plug	28,300	10/02/2008	TIMELY				
						Leak source is plug on bleeder -- not injectable							
0114NSPSGV00392	COMPR	COMPRESSOR 114GB-1 SW OF STAELLITE	04/29/2009	13,000	04/29/2009	Not a Valve	Not a Valve	Not a Valve	Not a Valve	05/15/2009	TIMELY	Yes	NA
0114NSPSLL00001	VALVE	AT CTL VF-153 W SIDE OF B-2 FURNACE	03/19/2008	558	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	04/03/2008	TIMELY	Yes	NA
0114NSPSLL00019	VALVE	AT CTL FV-152, 10 FT HIGH, W SIDE OF B-2 FURNACE	06/06/2007	1,104	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	06/19/2007	TIMELY	Yes	NA
0114NSPSLL00024	VALVE	AT CTL FV-151, W SIDE OF 16B-2 FURNACE LPB	06/04/2007	8,539	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	06/19/2007	TIMELY	Yes	NA
0114NSPSLL00025	VALVE	AT CTL FV-151 W SIDE OF 16B-2 FURNACE	09/14/2006	2,000	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	09/27/2006	TIMELY	Yes	NA
0114NSPSLL00029	VALVE	AT CTL FV-151 10 FT HIGH W SIDE OF 16B-2	09/25/2007	585	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	10/09/2007	TIMELY	Yes	NA
0114NSPSLL00030	VALVE	AT CTL FV-150, W SIDE OF 116B2	06/04/2007	2,327	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	06/19/2007	TIMELY	Yes	NA
0114NSPSLL00036	VALVE	AT CTL FV-150 10FT HIGH W SIDE OF 16B-2 FURNACE	09/14/2006	16,000	09/14/2006	Tighten packing	22,700	09/14/2006	TIMELY	09/27/2006	TIMELY	Yes	NA
						Tighten packing	674	09/21/2006	TIMELY				
						Tighten packing	1,211	09/25/2006	TIMELY				
0114NSPSLL00043	VALVE	CTV TV-531 SE SIDE OF E-5A EXCHANGER	06/05/2009	3,603	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	06/19/2009	TIMELY	Yes	NA
0114NSPSLL00046	VALVE	SE SIDE OF E-5A LPB	06/04/2007	1,213	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	06/19/2007	TIMELY	Yes	NA

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Component Number	Type	Description	Initial Inspection Date	Concentration (ppmv)	Date leaking > 10,000 ppmv	For valves leaking > 10,000 ppmv				Date placed on Delay of Repair	Placed on Delay of Repair by Unit Supervisor w/in 30 days?	Is LDAR monitoring continuing while on Delay of Repair	For pumps, were best efforts used to isolate and repair?
						Repair Method	Monitoring results	Date of repair	If injection or equivalent, timely? (i.e., injection or equivalent within 30 days)				
0114NSPSLL00125	VALVE	AT 114G-2 PUMP	06/06/2007	743	06/12/2007	Tighten packing	569	06/06/2007	TIMELY	06/19/2007	TIMELY	Yes	NA
						Tighten packing	512	06/08/2007	TIMELY				
						Tighten packing	22,400	06/12/2007	TIMELY				
						Further repair attempts (i.e., injection), were deemed to be unsafe by Operations due to process conditions							
0114NSPSLL00132	VALVE	AT 114G-2 PUMP	09/24/2007	89,900	09/24/2007	Steam fitting	53,900	09/24/2007	TIMELY	10/05/2007	TIMELY	Yes	NA
						Tighten fitting	61,800	09/27/2007	TIMELY				
						Tighten fitting	10,700	10/01/2007	TIMELY				
						Tighten fitting	30,300	10/02/2007	TIMELY				
						Leak source was a fitting on valve (not packing) - injection not an option							
0114NSPSLL00171	VALVE	E OF PUMP 14G-8 10 FT HIGH	03/17/2008	3,703	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	04/01/2008	TIMELY	Yes	NA
0114NSPSLL00187	VALVE	AT CTL 14LV-725, SE SIDE OF F-3	10/15/2008	2,549	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	10/23/2007	TIMELY	Yes	NA
0114NSPSLL00188	VALVE	SE SIDE OF 14F-3 AT CTL 14LV-725	09/21/2008	1,483	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	10/05/2007	TIMELY	Yes	NA
0114NSPSLL00251	VALVE	AT PUMP 14G-2	06/05/2007	3,285	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	06/19/2007	TIMELY	Yes	NA
0114NSPSLL00253	VALVE	G-2 PUMP	06/06/2007	1,199	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	06/19/2007	TIMELY	Yes	NA
0114NSPSLL00308	VALVE	12 FT HIGH 12 FT N SIDE OF G-8 PUMP	06/13/2008	1,220	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	06/23/2008	TIMELY	Yes	NA
0114NSPSLL00332	VALVE	E SIDE OF PMP 14G-8 LPB	09/22/2007	1,151	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	10/05/2007	TIMELY	Yes	NA
0114NSPSLL00333	VALVE	E SIDE OF PUMP 114G-8	12/05/2006	1,827	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	12/20/2006	TIMELY	Yes	NA
0114NSPSLL00334	VALVE	E SIDE OF PUMP 114G-8	06/09/2008	802	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	06/18/2008	TIMELY	Yes	NA
0114NSPSLL00336	VALVE	E SIDE OF G-8 PUMP	10/12/2006	1,050	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	10/27/2006	TIMELY	Yes	NA
0114NSPSLL00337	VALVE	E SIDE OF PUMP 14G-8	06/06/2006	4,128	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	07/06/2006	TIMELY	Yes	NA
0114NSPSLL00357	VALVE	CTV PV-373 TOP S SIDE OF 14F-4 1ST LANDING	06/11/2009	2,550	na	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	06/19/2009	TIMELY	Yes	NA
0114NSPSLL00367	VALVE	25 FT HIGH 6 FT NW SIDE OF G-6 PUMP	05/02/2007	722	05/04/2007	Apply sealant	14,400	05/04/2007	TIMELY	05/23/2007	TIMELY	Yes	NA
						Previous repair	1,873	05/17/2007	TIMELY				
0114NSPSLL00434	RELIEF	SV-4002 UNDER N FFs	09/10/2008	1,600	NA	Not a Valve	Not a Valve	Not a Valve	Not a Valve	09/25/2008	TIMELY	Yes	NA
0114NSPSLL00514	VALVE	S SIDE OF PUMP GM-7B	09/24/2007	3,608	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	10/11/2007	TIMELY	Yes	NA
0114NSPSLL00603	VALVE	SW SIDE OF 14D-2 LANDING	03/30/2008	1,263	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	04/04/2008	TIMELY	Yes	NA
0114NSPSLL00604	VALVE	10 ft NORTH OF 114-F4 1st LANDING ORIFICE TAP AT 14FT-115	09/09/2008	32,700	09/09/2008	Steam packing	31800	09/09/2008	TIMELY	09/25/2008	TIMELY	Yes	NA
						Tighten packing	3875	09/11/2008	TIMELY				
						Tighten packing	1736	09/17/2008	TIMELY				
						Previous repair	2684	09/22/2008	TIMELY				
						Previous repair	9067	09/25/2008	TIMELY				
0114NSPSLL00608	VALVE	10 FT NORTH OF 116F-2 1ST LANDING ORIFICE TAP AT 114FT-157	06/13/2008	6,109	06/13/2008	Tighten packing	14,000	06/13/2008	TIMELY	06/23/2008	TIMELY	Yes	NA
						Tighten packing	2,431	06/18/2008	TIMELY				
						Apply sealant	603	06/20/2008	TIMELY				

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Component Number	Type	Description	Initial Inspection Date	Concentration (ppmv)	Date leaking > 10,000 ppmv	For valves leaking > 10,000 ppmv				Date placed on Delay of Repair	Placed on Delay of Repair by Unit Supervisor w/in 30 days?	Is LDAR monitoring continuing while on Delay of Repair	For pumps, were best efforts used to isolate and repair?
						Repair Method	Monitoring results	Date of repair	If injection or equivalent, timely? (i.e., injection or equivalent within 30 days)				
0114NSPSLL00125	VALVE	AT 114G-2 PUMP	06/06/2007	743	06/12/2007	Tighten packing	569	06/06/2007	TIMELY	06/19/2007	TIMELY	Yes	NA
						Tighten packing	512	06/08/2007	TIMELY				
						Tighten packing	22,400	06/12/2007	TIMELY				
0114NSPSLL00132	VALVE	AT 114G-2 PUMP	09/24/2007	89,900	09/24/2007	Further repair attempts (i.e., injection), were deemed to be unsafe by Operations due to process conditions							
						Steam fitting	53,900	09/24/2007	TIMELY	10/05/2007	TIMELY	Yes	NA
						Tighten fitting	61,800	09/27/2007	TIMELY				
						Tighten fitting	10,700	10/01/2007	TIMELY				
						Tighten fitting	30,300	10/02/2007	TIMELY				
						Leak source was a fitting on valve (not packing) - injection not an option							
0114NSPSLL00171	VALVE	E OF PUMP 14G-8 10 FT HIGH	03/17/2008	3,703	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	04/01/2008	TIMELY	Yes	NA
0114NSPSLL00187	VALVE	AT CTL 14LV-725, SE SIDE OF F-3	10/15/2008	2,549	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	10/23/2007	TIMELY	Yes	NA
0114NSPSLL00188	VALVE	SE SIDE OF 14F-3 AT CTL 14LV-725	09/21/2008	1,483	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	10/05/2007	TIMELY	Yes	NA
0114NSPSLL00251	VALVE	AT PUMP 14G-2	06/05/2007	3,285	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	06/19/2007	TIMELY	Yes	NA
0114NSPSLL00253	VALVE	G-2 PUMP	06/06/2007	1,199	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	06/19/2007	TIMELY	Yes	NA
0114NSPSLL00308	VALVE	12 FT HIGH 12 FT N SIDE OF G-8 PUMP	06/13/2008	1,220	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	06/23/2008	TIMELY	Yes	NA
0114NSPSLL00332	VALVE	E SIDE OF PMP 14G-8 LPB	09/22/2007	1,151	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	10/05/2007	TIMELY	Yes	NA
0114NSPSLL00333	VALVE	E SIDE OF PUMP 114G-8	12/05/2006	1,827	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	12/20/2006	TIMELY	Yes	NA
0114NSPSLL00334	VALVE	E SIDE OF PUMP 114G-8	06/09/2008	802	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	06/18/2008	TIMELY	Yes	NA
0114NSPSLL00336	VALVE	E SIDE OF G-8 PUMP	10/12/2006	1,050	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	10/27/2006	TIMELY	Yes	NA
0114NSPSLL00337	VALVE	E SIDE OF PUMP 14G-8	06/06/2006	4,128	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	07/06/2006	TIMELY	Yes	NA
0114NSPSLL00357	VALVE	CTV PV-373 TOP S SIDE OF 14F-4 1ST LANDING	06/11/2009	2,550	na	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	06/19/2009	TIMELY	Yes	NA
0114NSPSLL00367	VALVE	25 FT HIGH 6 FT NW SIDE OF G-6 PUMP	05/02/2007	722	05/04/2007	Apply sealant	14,400	05/04/2007	TIMELY	05/23/2007	TIMELY	Yes	NA
						Previous repair	1,873	05/17/2007	TIMELY				
0114NSPSLL00434	RELIEF	SV-4002 UNDER N FFs	09/10/2008	1,600	NA	Not a Valve	Not a Valve	Not a Valve	Not a Valve	09/25/2008	TIMELY	Yes	NA
0114NSPSLL00514	VALVE	S SIDE OF PUMP GM-7B	09/24/2007	3,608	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	10/11/2007	TIMELY	Yes	NA
0114NSPSLL00603	VALVE	SW SIDE OF 14D-2 LANDING	03/30/2008	1,263	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	04/04/2008	TIMELY	Yes	NA
0114NSPSLL00604	VALVE	10 ft NORTH OF 114-F4 1st LANDING ORIFICE TAP AT 14FT-115	09/09/2008	32,700	09/09/2008	Steam packing	31800	09/09/2008	TIMELY	09/25/2008	TIMELY	Yes	NA
						Tighten packing	3875	09/11/2008	TIMELY				
						Tighten packing	1736	09/17/2008	TIMELY				
						Previous repair	2684	09/22/2008	TIMELY				
						Previous repair	9067	09/25/2008	TIMELY				
0114NSPSLL00608	VALVE	10 FT NORTH OF 116F-2 1ST LANDING ORIFICE TAP AT 114FT-157	06/13/2008	6,109	06/13/2008	Tighten packing	14,000	06/13/2008	TIMELY	06/23/2008	TIMELY	Yes	NA
						Tighten packing	2,431	06/18/2008	TIMELY				
						Apply sealant	603	06/20/2008	TIMELY				

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						Repair Method	Monitoring results	Date of repair	If injection or equivalent, timely? (i.e., injection or equivalent within 30 days)				
0115NSPSGV00013	VALVE	E SIDE OF 15GB-7	09/13/2006	11,393	09/13/2006	Tighten packing	9,993	09/13/2006	TIMELY	09/27/2006	TIMELY	Yes	NA
						Tighten packing	4,823	09/20/2006	TIMELY				
						Tighten packing	1,855	09/21/2006	TIMELY				
						Previous repair	2,564	09/25/2006	TIMELY				
						Previous repair	726	09/27/2006	TIMELY				
0115NSPSGV00287	VALVE	W SIDE OF F-9 AT SG	11/20/2007	703	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	11/28/2007	TIMELY	Yes	NA
0115NSPSLL00006	VALVE	W SIDE OF F-9	02/05/2009	1,042	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	02/20/2009	TIMELY	Yes	NA
0116NSPSGV00012	VALVE	EAST SIDE OF COMPRESSOR 116GB-1 ON LANDING AT PRESSURE INDICATOR	07/11/2008	6,029	07/15/2008	Tighten packing	8368	07/11/2008	TIMELY	07/28/2008	TIMELY	Yes	NA
						Tighten packing	20600	07/15/2008	TIMELY				
						Apply sealant	6992	07/17/2008	TIMELY				
						Needle valve - can not inject							
0116NSPSGV00073	VALVE	UNDERNEATH REACTOR 16-D2	12/07/2006	13,333	12/07/2006	Tighten packing	787	12/13/2006	TIMELY	12/21/2006	TIMELY	Yes	NA
						Previous repair	2,199	12/15/2006	TIMELY				
						Sealant	665	12/18/2006	TIMELY				
						Previous repair	6,944	12/20/2006	TIMELY				
						Previous repair	921	12/21/2006	TIMELY				
0116NSPSGV00079	VALVE	UNDER RECTOR 16-D1	03/18/2008	869	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	03/27/2008	TIMELY	Yes	NA
0116NSPSGV00094	VALVE	N OF SOUTH FIN FAN 16E-7 OH 15 FT	06/09/2009	2,675	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	06/24/2009	TIMELY	Yes	NA
0116NSPSGV00148	VALVE	SW SIDE OF SEPARATOR 14F-1 25 FT UP BY COLUMN PS32	06/19/2008	8,853	06/24/2008	Steam packing	4,535	06/19/2008	TIMELY	07/03/2008	TIMELY	Yes	NA
						Tighten packing	12,900	06/24/2008	TIMELY				
						Previous repair	20,200	07/02/2008	TIMELY				
						Tighten packing	1,552	07/03/2008	TIMELY				
						Inject	59,000	07/03/2008	TIMELY				
0116NSPSGV00210	VALVE	S SIDE OF FIN FANS 16E-6A TOP LANDING	09/12/2006	3,501	09/25/2006	steam seal	1,939	09/12/2006	TIMELY	09/27/2006	TIMELY	Yes	NA
						Inject	1,480	09/21/2006	TIMELY				
						Tighten packing	3,100	09/22/2006	TIMELY				
						Steamed and tightened packing	10,400	09/25/2006	TIMELY				
						Previous repair	2,355	09/27/2006	TIMELY				
						Previous repair	1,272	09/27/2006	TIMELY				
0116NSPSGV00223	VALVE	OH COMPRESSOR, 14F-9B AT TOP LANDING	10/24/2007	15,100	10/24/2007	Tighten packing	27,000	10/24/2007	TIMELY	11/20/2007	TIMELY	Yes	NA
						Tighten packing	563	10/30/2007	TIMELY				
						Tighten packing	2,422	11/01/2007	TIMELY				
						Tighten packing	1,249	11/01/2007	TIMELY				
						Tighten packing	1,042	11/02/2007	TIMELY				
						Re-injection	3,008	11/05/2007	TIMELY				
						Re-injection	1,066	11/07/2007	TIMELY				
						close valve	1,219	11/09/2007	TIMELY				

**ATTACHMENT 9, Appendix C**  
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						Repair Method	Monitoring results	Date of repair	If injection or equivalent, timely? (i.e., injection or equivalent within 30 days)				
0116NSPSGV00233	VALVE	OH COMPRESSOR 116GV-1 OFF 1ST LANDING	06/20/2008	2,712	06/24/2008	Tighten packing	2,643	06/20/2008	TIMELY	07/03/2008	TIMELY	Yes	NA
						Tighten packing	32,800	06/24/2008	TIMELY				
						Tighten packing	14,000	06/26/2008	TIMELY				
						Previous repair	9,095	07/02/2008	TIMELY				
						Previous repair	2,044	07/03/2008	TIMELY				
0116NSPSGV00269	VALVE	LANDING ABOVE AND E OF COMPRESSOR 16GB-1	06/03/2006	3,303	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	06/19/2006	TIMELY	Yes	NA
0116NSPSGV00318	VALVE	TOP OF D-4 TOWER HPB	09/21/2007	18,900	09/21/2007	Tighten flange	13,900	09/21/2007	TIMELY	10/05/2007	TIMELY	Yes	NA
						Tighten flange	12,600	09/26/2007	TIMELY				
						Tighten flange	1,105	09/28/2007	TIMELY				
						Tighten flange	804	10/01/2007	TIMELY				
						Tighten flange	3,144	10/02/2007	TIMELY				
0116NSPSGV00354	VALVE	TOP S SIDE OF F-2 DRUM 1ST LANDING INST PT-371	09/12/2006	4,819	09/18/2006	Leak source was upstream flange. Not injectable.				09/27/2006	TIMELY	Yes	NA
						Tighten packing	20,000	09/18/2006	TIMELY				
						Tighten packing	12,800	09/18/2006	TIMELY				
						Tighten packing	19,200	09/21/2006	TIMELY				
						Previous repair	51,700	09/25/2006	TIMELY				
0116NSPSGV00362	VALVE	TO S SIDE OF E-4 EXCHANGER, 2ND LANDING	09/22/2007	2,345	NA	Needle valve - can not inject				10/05/2007	TIMELY	Yes	NA
						Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000				
						Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000				
						Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000				
						Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000				
0116NSPSGV00502	VALVE	E SIDE OF TOWER 16F-1 AT 16FT-104	09/26/2007	4,765	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	10/05/2007	TIMELY	Yes	NA
0116NSPSGV00554	VALVE	AT COMPRESSOR 116GV-1 E SIDE LANDING	03/18/2008	8,371	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	03/27/2008	TIMELY	Yes	NA
0116NSPSGV00622	VALVE	W SIDE OF TOWER 16F-1 15 FT UP AT SG	03/28/2008	5,173	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	04/14/2008	TIMELY	Yes	NA
0116NSPSGV00643	VALVE	W BATTERY LIMITS 2ND LANDING	09/13/2006	14,194	09/13/2006	Tighten packing	21,000	09/18/2006	TIMELY	09/27/2006	TIMELY	Yes	NA
						Tighten packing	17,500	09/19/2006	TIMELY				
						Tighten packing	9,000	09/20/2006	TIMELY				
						Tighten packing	5,831	09/21/2006	TIMELY				
						Tighten packing	7,540	09/22/2006	TIMELY				
						Previous repair	5,573	09/25/2006	TIMELY				
						Previous repair	2,527	09/27/2006	TIMELY				

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						Repair Method	Monitoring results	Date of repair	If injection or equivalent, timely? (i.e., injection or equivalent within 30 days)				
0116NSPSGV00713	VALVE	155 FT HIGH 10 FT NW SIDE OF G-6 PUMP	09/17/2009	4,456	09/28/2009	Tighten packing	5,957	09/17/2009	TIMELY	09/29/2009	TIMELY	Yes	NA
						Tighten packing	2,072	09/21/2009	TIMELY				
						Tighten packing	2,503	02/22/2009	TIMELY				
						Applied sealant	1,858	09/25/2009	TIMELY				
						Applied sealant	593	09/25/2009	TIMELY				
						Applied sealant	588	09/28/2009	TIMELY				
						Steam	25,900	09/28/2009	TIMELY				
						Previous repair	1,473	10/05/2009	TIMELY				
0116NSPSGV00753	VALVE	E SIDE OF TOWER 16D-4 1ST LANDING AT SG	06/05/2006	14,194	06/14/2006	Tighten packing	2,530	06/05/2006	TIMELY	07/05/2006	TIMELY	Yes	NA
						Previous repair	2,679	06/06/2006	TIMELY				
						Previous repair	671	06/07/2006	TIMELY				
						Previous repair	1,232	06/08/2006	TIMELY				
						Previous repair	1,077	06/09/2006	TIMELY				
						Previous repair	1,129	06/12/2006	TIMELY				
						Previous repair	1,088	06/13/2006	TIMELY				
						Previous repair	16,300	06/14/2006	TIMELY				
						Tighten packing	2,094	06/15/2006	TIMELY				
						Previous repair	726	06/16/2006	TIMELY				
						Previous repair	19,200	06/19/2006	TIMELY				
						Re-inject	15,500	06/20/2006	TIMELY				
						Re-inject	13,900	06/20/2006	TIMELY				
						Previous repair	795	06/21/2006	TIMELY				
						Previous repair	1,154	06/22/2006	TIMELY				
						Previous repair	941	06/23/2006	TIMELY				
						Previous repair	1,061	06/26/2006	TIMELY				
						Previous repair	21,400	06/29/2006	TIMELY				
						Previous repair	16,700	06/30/2006	TIMELY				
						Previous repair	3,072	07/03/2006	TIMELY				
						Previous repair	910	07/05/2006	TIMELY				
						Previous repair	811	07/06/2006	TIMELY				
0116NSPSLL00010	VALVE	W SIDE OF FEED HEATER 16B-1 1ST LANDING 5 FT UP SPB	03/16/2009	3,714	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	03/23/2009	TIMELY	Yes	NA
0116NSPSLL00013	VALVE	AT CTL 16FV-130 W SIDE OF FEED HEATER 116B-1	10/12/2006	2,015	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	10/25/2006	TIMELY	Yes	NA

**ATTACHMENT 9, Appendix C**  
**Delay of Repair Information**  
**[130(b)(vii)]**

**Lemont Refinery**  
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**Delay of Repair List**

This is a list of those items currently on the Delay of Repair list (as of end of reporting period), placed there since February 28, 2006.

Component Number	Type	Description	Initial Inspection Date	Concentration (ppmv)	Date leaking > 10,000 ppmv	For valves leaking > 10,000 ppmv				Date placed on Delay of Repair	Placed on Delay of Repair by Unit Supervisor w/in 30 days?	Is LDAR monitoring continuing while on Delay of Repair	For pumps, were best efforts used to isolate and repair?
						Repair Method	Monitoring results	Date of repair	if injection or equivalent, timely? (i.e., injection or equivalent within 30 days)				
0116NSPSLL00014	VALVE	AT CTL 16FV-130 W SIDE OF FEED HEATER 116B-1	10/12/2006	1,122	10/23/2006	Tighten packing	2,205	10/12/2006	TIMELY	10/27/2006	TIMELY	Yes	NA
						Previous repair	2,416	10/16/2006	TIMELY				
						Previous repair	506	10/18/2006	TIMELY				
						Inject	3,390	10/19/2006	TIMELY				
						Previous repair	646	10/20/2006	TIMELY				
						Previous repair	11,353	10/23/2006	TIMELY				
						Previous repair	3,722	10/24/2006	TIMELY				
						Steam seal	1,612	10/25/2006	TIMELY				
						Previous repair	9,987	10/26/2006	TIMELY				
						Previous repair	4,311	10/27/2006	TIMELY				
0116NSPSLL00018	VALVE	AT CTL FV-130 W OF 116B-1 OH ORIFICE TAP	12/07/2006	13,800	12/07/2006	Steam seal	10,800	12/07/2006	TIMELY	12/21/2006	TIMELY	Yes	NA
						Tighten packing	3,189	12/15/2006	TIMELY				
						Steam packing	667	12/18/2006	TIMELY				
						Sealant	6,869	12/19/2006	TIMELY				
						Previous repair	2,944	12/20/2006	TIMELY				
0116NSPSLL00113	VALVE	AT CTL FV-132 10FT HIGH W SIDE OF B 4 FURNACE	12/07/2006	23,400	12/07/2006	Steam seal	21,000	12/07/2006	TIMELY	12/21/2006	TIMELY	Yes	NA
						Tighten packing	525	12/15/2006	TIMELY				
						Steam packing	629	12/18/2006	TIMELY				
						Sealant	568	12/19/2006	TIMELY				
						Previous repair	1,295	12/20/2006	TIMELY				
0116NSPSLL00140	VALVE	W SIDE OF E-3 1ST LANDING	11/20/2006	657	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	12/05/2006	TIMELY	Yes	NA
						Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	07/28/2006	TIMELY	Yes	NA
0116NSPSLL00144	VALVE	PUMP 16G-3B	07/11/2006	4,786	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	07/28/2006	TIMELY	Yes	NA
0116NSPSLL00158	VALVE	AT CTL FV-109 W SIDE OF 116E-3	06/03/2006	917,600	06/03/2006	Tighten packing	17,800	06/03/2006	TIMELY	06/19/2006	TIMELY	Yes	NA
						Tighten packing	8,190	06/06/2006	TIMELY				
						Tighten packing	2,013	06/07/2006	TIMELY				
						Tighten packing	10,300	06/08/2006	TIMELY				
						Previous repair	2,982	06/09/2006	TIMELY				
						Previous repair	14,700	06/12/2006	TIMELY				
						Previous repair	3,536	06/13/2006	TIMELY				
						Previous repair	6,770	06/14/2006	TIMELY				
						Tighten packing	2,530	06/15/2006	TIMELY				
						Previous repair	2,753	06/16/2006	TIMELY				
0116NSPSLL00169	VALVE	AT PUMP 16G-3A	12/05/2006	1,137	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	12/20/2006	TIMELY	Yes	NA
						Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	12/21/2006	TIMELY	Yes	NA
0116NSPSLL00170	VALVE	E SIDE OF D-4 TOWER 1ST LANDING	12/06/2006	888	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	12/21/2006	TIMELY	Yes	NA
0116NSPSLL00172	VALVE	E SIDE OF D-4 TOWER 1ST LANDING	12/06/2006	574	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	12/21/2006	TIMELY	Yes	NA

**ATTACHMENT 9, Appendix C**  
**Delay of Repair Information**  
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**Delay of Repair List**

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This is a list of those items currently on the Delay of Repair list (as of end of reporting period), placed there since February 28, 2008.													
Component Number	Type	Description	Initial Inspection Date	Concentration (ppmv)	Date leaking > 10,000 ppmv	For valves leaking > 10,000 ppmv				Date placed on Delay of Repair	Placed on Delay of Repair by Unit Supervisor w/in 30 days?	Is LDAR monitoring continuing while on Delay of Repair	For pumps, were best efforts used to isolate and repair?
						Repair Method	Monitoring results	Date of repair	If injection or equivalent, timely? (i.e., injection or equivalent within 30 days)				
0116NSPSLL00262	VALVE	G-2A PUMP SPB	12/11/2007	657	12/13/2007	Steam plug	2,247	12/11/2007	TIMELY	01/10/2008	TIMELY	Yes	NA
						Replace plug	10,329	12/13/2007	TIMELY				
						Tighten packing	3,825	12/17/2007	TIMELY				
						Previous repair	3,844	12/18/2007	TIMELY				
						Tighten packing	2,667	12/19/2007	TIMELY				
						Previous repair	6,383	12/20/2007	TIMELY				
						Inject	3,305	12/21/2007	TIMELY				
						Previous repair	3,604	12/26/2007	TIMELY				
						Previous repair	3,451	12/27/2007	TIMELY				
						Previous repair	6,643	12/28/2007	TIMELY				
						Previous repair	4,763	01/03/2008	TIMELY				
						Previous repair	1,769	01/10/2008	TIMELY				
						Re-inject	2,798	01/10/2008	TIMELY				
						0116NSPSLL00270	VALVE	G-2B PUMP SPB	09/14/2006				
Tighten packing	1,691	09/21/2006	TIMELY										
Previous repair	4,502	09/25/2006	TIMELY										
Previous repair	42,100	09/27/2006	TIMELY										
0116NSPSLL00275	VALVE	10 FT HIGH PUMP G-2B PUMP	09/22/2007	7,749	09/26/2007	Leak source was the plug and could not be injected				10/05/2007	TIMELY	Yes	NA
						Tighten packing	894	09/22/2007	TIMELY				
						Tighten packing	66,700	09/26/2007	TIMELY				
						Tighten packing	55,400	09/28/2007	TIMELY				
						Tighten packing	13,600	10/01/2007	TIMELY				
						Tighten packing	139,100	10/02/2007	TIMELY				
						Inject	41,700	10/03/2007	TIMELY				
						Re-inject	1,509	10/05/2007	TIMELY				
0116NSPSLL00279	VALVE	S SIDE OF FIN FANS 16E-6B TOP LANDING	09/09/2008	13,299	09/09/2008	Tighten flange	18,599	09/09/2008	TIMELY	09/25/2008	TIMELY	Yes	NA
						Tighten flange	903	09/11/2008	TIMELY				
						Tighten flange	1,006	09/17/2008	TIMELY				
						Previous repair	584	09/22/2008	TIMELY				
						Previous repair	1,360	09/25/2008	TIMELY				
						Leak source was valve flange							
0116NSPSLL00395	PUMP	PUMP 116G-3B	05/05/2009	100,000	05/05/2009	Not a Valve	Not a Valve	Not a Valve	Not a Valve	05/21/2009	TIMELY	Yes	Yes
0118NSPSGV00076	VALVE	PLATFORM N OF FIN FAN 118E-4 OVER RAIL	08/15/2007	665	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	08/30/2007	TIMELY	Yes	NA
0118NSPSGV00218	VALVE	AT 118D-5 1ST LANDING OUTSIDE LADDER SW SIDE AT SG	08/17/2007	1,131	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	08/31/2007	TIMELY	Yes	NA
0118NSPSLL00001	VALVE	N SIDE OF REACTOR 118D-51B ON BOTTOM E SIDE	07/09/2007	4,283	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	07/24/2007	TIMELY	Yes	NA
0118NSPSLL00005	VALVE	N SIDE OF REACTOR 118D-51C ON BOTTOM W SIDE	11/14/2007	929	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	11/29/2007	TIMELY	Yes	NA



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Component Number	Type	Description	Initial Inspection Date	Concentration (ppmv)	Date leaking > 10,000 ppmv	For valves leaking > 10,000 ppmv				Date placed on Delay of Repair	Placed on Delay of Repair by Unit Supervisor w/in 30 days?	Is LDAR monitoring continuing while on Delay of Repair	For pumps, were best efforts used to isolate and repair?
						Repair Method	Monitoring results	Date of repair	if injection or equivalent, timely? (i.e., injection or equivalent within 30 days)				
0118NSPSLL00006	VALVE	N SIDE OF REACTOR 118D-51C ON BOTTOM W SIDE	10/17/2006	794	10/19/2006	Steam seal	5,692	10/17/2006	TIMELY	11/01/2006	TIMELY	Yes	NA
						Previous repair	11,600	10/19/2006	TIMELY				
						Previous repair	13,100	10/20/2006	TIMELY				
						Previous repair	11,981	10/23/2006	TIMELY				
						Previous repair	8,642	10/24/2006	TIMELY				
						Previous repair	2,106	10/25/2006	TIMELY				
						Previous repair	7,179	10/26/2006	TIMELY				
						Previous repair	2,148	10/27/2006	TIMELY				
						Previous repair	590	10/30/2006	TIMELY				
						Previous repair	708	10/31/2006	TIMELY				
						Previous repair	538	11/01/2006	TIMELY				
						Tighten fitting	738	11/01/2006	TIMELY				
0118NSPSLL00041	VALVE	S OF PUMP 118G-2 UNDER W BATT LIMITS IN INST BOX FT-105	08/17/2007	1,020	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	08/31/2007	TIMELY	Yes	NA
0118NSPSLL00071	VALVE	ON CTL 118FV-103 S OF TOWER 118D-1	01/17/2007	5,194	01/17/2007	Steam seal (upstream flange)	21,200	01/17/2007	TIMELY	01/31/2007	TIMELY	Yes	NA
						Previous repair	4,120	01/19/2007	TIMELY				
						Apply sealant	851	01/23/2007	TIMELY				
						Apply sealant	1,053	01/26/2007	TIMELY				
						Previous repair	637	01/31/2007	TIMELY				
0118NSPSLL00122	VALVE	E OF PUMP 18G-58B N OF FIN FAN EF-53A	11/13/2007	775	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	11/29/2007	TIMELY	Yes	NA
0118NSPSLL00124	VALVE	E OF PUMP 18G-58B N OF FIN FAN EF-53A	11/13/2007	804	11/13/2007	Steamed flange	23,100	11/13/2007	TIMELY	11/29/2007	TIMELY	Yes	NA
						Previous repair	688	11/27/2007	TIMELY				
						Previous repair	3,279	11/28/2007	TIMELY				
						Previous repair	3,018	11/29/2007	TIMELY				
						Leak source was valve flange - not injectable.							
0118NSPSLL00332	VALVE	UNDER 18F-51	11/14/2007	638	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	11/30/2007	TIMELY	Yes	NA
0118NSPSLL00346	VALVE	S OF TOWER 118-D1	05/01/2008	627	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	05/15/2008	TIMELY	Yes	NA
0118NSPSLL00406	VALVE	S SIDE OF PUMP 18G-10	02/08/2008	803	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	02/20/2008	TIMELY	Yes	NA
0118NSPSLL00458	VALVE	S SIDE OF PUMP 118G-12B	05/11/2007	524	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	05/25/2007	TIMELY	Yes	NA
0118NSPSLL00488	VALVE	W BATT LIMITS BELOW PLAT NE SIDE ABOVE PUMP 118G-20	05/16/2008	1,172	05/20/2008	Steam packing	1,657	05/16/2008	TIMELY	05/30/2008	TIMELY	Yes	NA
						Tighten packing	26,300	05/20/2008	TIMELY				
						Tighten packing	14,900	05/22/2008	TIMELY				
						Inject	2,517	05/27/2008	TIMELY				
						Inject	8,372	05/28/2008	TIMELY				

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						Repair Method	Monitoring results	Date of repair	If injection or equivalent, timely? (i.e., injection or equivalent within 30 days)				
01158NSPSLL00489	VALVE	W BATT LIMITS BELOW PLAT NE SIDE ABOVE PUMP 118G-20	05/16/2008	2,431	05/20/2008	Steam packing	3,108	05/16/2008	TIMELY	05/30/2008	TIMELY	Yes	NA
						Tighten packing	29,700	05/20/2008	TIMELY				
						Tighten packing	20,400	05/22/2008	TIMELY				
						Inject	1,908	05/27/2008	TIMELY				
						Inject	564	05/28/2008	TIMELY				
						Previous repair	2,931	05/30/2008	TIMELY				
0118NSPSLL00497	VALVE	S OF TOWER 118D-1 OH L SIDE OF INST BOX 118D-1	05/16/2007	935	05/21/2007	Tighten packing	6,003	05/16/2007	TIMELY	05/31/2007	TIMELY	Yes	NA
						Tighten packing	13,000	05/21/2007	TIMELY				
						Tighten packing	1,189	05/24/2007	TIMELY				
						Previous repair	717	05/30/2007	TIMELY				
						Tighten packing	592	05/31/2007	TIMELY				
0118NSPSLL00547	VALVE	3RD LEVEL FROM TOP OF 118D-4 E SIDE	05/16/2007	8,326	05/24/2007	Tighten packing	9,719	05/16/2007	TIMELY	05/31/2007	TIMELY	Yes	NA
						Tighten packing	868	05/21/2007	TIMELY				
						Tighten packing	20,500	05/24/2007	TIMELY				
						Previous repair	112,200	05/30/2007	TIMELY				
						Previous repair	13,800	05/31/2007	TIMELY				
						Cast valve; follower and stud bent -- unsafe to be injected.							
0118NSPSLL00577	VALVE	SW SIDE OF 18E-55A/B	11/16/2007	621	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	11/30/2007	TIMELY	Yes	NA
0118NSPSLL00586	VALVE	NW SIDE OF 18E-55A/B	05/02/2008	1,556	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	05/08/2008	TIMELY	Yes	NA
0118NSPSLL00593	VALVE	4TH LEVEL OF 118D-4 E SIDE	05/16/2007	2,831	05/30/2007	Tighten packing	1,640	05/16/2007	TIMELY	05/31/2007	TIMELY	Yes	NA
						Tighten packing	2,538	05/21/2007	TIMELY				
						Tighten packing	6,373	05/24/2007	TIMELY				
						Previous repair	18,100	05/30/2007	TIMELY				
						Inject	295	05/31/2007	TIMELY				
0119NSPSGV00080	VALVE	CTV PV-2400 NW SIDE OF F-21 C	02/26/2008	63,900	02/26/2008	Steam packing	69,100	02/26/2008	TIMELY	03/12/2008	TIMELY	Yes	NA
						Previous repair	42,000	03/06/2008	TIMELY				
						Previous repair	5,924	03/10/2008	TIMELY				
						Tighten packing	5,185	03/12/2008	TIMELY				
						Control valve - can not inject							
0120NSPSGV00204	VALVE	N SIDE OF F-418 2ND LANDING AT PIPE ROW	06/25/2008	1,514	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	07/10/2008	TIMELY	Yes	NA
0120NSPSGV00490	VALVE	AT CTL PV385 TOP OF F-523	06/24/2008	69,600	06/24/2008	Tighten packing	4315	06/24/2008	TIMELY	07/09/2008	TIMELY	Yes	NA
						Tighten packing	2930	06/26/2008	TIMELY				
						Tighten packing	1786	07/01/2008	TIMELY				
						Inject	1148	07/08/2008	TIMELY				
						Inject	1116	07/09/2008	TIMELY				
0120NSPSGV00498	VALVE	AT CTL PV385 TOP OF F-523	09/11/2008	888	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	09/24/2008	TIMELY	Yes	NA
0120NSPSLL00178	VALVE	E SIDE OF E-505 8 FT HIGH	06/28/2008	635	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	07/11/2008	TIMELY	Yes	NA
0120NSPSLL00676	VALVE	CTL FV-142 N SIDE OF D-506	10/08/2008	2,617	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	10/22/2008	TIMELY	Yes	NA
0120NSPSLL01130	VALVE	CTL FV-269 W SIDE OF 120E-534	06/03/2009	1,086	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	06/10/2009	TIMELY	Yes	NA

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						Repair Method	Monitoring results	Date of repair	If injection or equivalent, timely? (i.e., injection or equivalent within 30 days)				
0120NSPSLL01165	VALVE	12 FT N OF F-527 2ND LANDING	06/04/2007	5,124	06/21/2007	Steam bonnet	75,200	06/08/2007	TIMELY	06/19/2007	TIMELY	Yes	NA
						Tighten flange	4,532	06/19/2007	TIMELY				
						Tighten flange	6,424	06/20/2007	TIMELY				
						Tighten bonnet	16,300	06/21/2007	TIMELY				
						Inject	12,706	06/21/2007	TIMELY				
0120NSPSLL01170	VALVE	ON E SIDE OF BATTERY LIMIT ISO BUTANE OUT	03/11/2008	631	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	03/25/2008	TIMELY	Yes	NA
0120NSPSLL01176	VALVE	ON NE SIDE OF BATTERY LIMIT BUTANE FEED TO SPLITTER	12/02/2008	5,128	12/02/2008	Tighten flange	19900	12/02/2008	TIMELY	12/10/2008	TIMELY	Yes	NA
						Tighten flange	701	12/04/2008	TIMELY				
						Tighten flange	2287	12/06/2008	TIMELY				
						leak source was valve flange							
0122HONGV00123	VALVE	N SIDE OF 122FC-3	04/14/2009	5,747	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	04/28/2009	TIMELY	Yes	NA
0122HONGV00195	VALVE	S END OF 122EH-13	08/22/2006	2,846	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	09/01/2006	TIMELY	Yes	NA
0122HONGV00216	VALVE	CTL N SIDE OF 122FH-7 BYPASS	01/18/2008	807	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	01/29/2008	TIMELY	Yes	NA
0122HONGV00254	VALVE	AT CTL 122PV-419 W OF 122FH-9	10/11/2007	607	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	10/26/2007	TIMELY	Yes	NA
0122HONGV00255	VALVE	AT CTL 122PV-419 W OF 122FH-9	05/06/2008	688	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	05/21/2008	TIMELY	Yes	NA
0122HONGV00262	VALVE	AT CTL 122PV-419 W OF 122FH-9	07/07/2008	857	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	07/16/2008	TIMELY	Yes	NA
0122HONGV00265	CONNECT	AT 122EH-16 FLNG	01/11/2007	12,900	01/11/2007	Not a Valve	Not a Valve	Not a Valve	Not a Valve	01/18/2007	TIMELY	Yes	NA
0122HONGV00268	CONNECT	AT 122EH-16 FLNG	01/09/2007	566	NA	Not a Valve	Not a Valve	Not a Valve	Not a Valve	01/18/2007	TIMELY	Yes	NA
0122HONGV00270	CONNECT	AT 122EH-16 FLNG	01/12/2007	1,054	02/20/2007	Not a Valve	Not a Valve	Not a Valve	Not a Valve	01/18/2007	TIMELY	Yes	NA
0122HONGV00276	CONNECT	AT 122EH-16 FLNG	01/28/2008	6,897	na	Not a Valve	Not a Valve	Not a Valve	Not a Valve	02/13/2008	TIMELY	Yes	NA
0122HONGV00279	CONNECT	AT 122EH-16 FLNG	01/12/2007	1,158	01/16/2007	Not a Valve	Not a Valve	Not a Valve	Not a Valve	01/18/2007	TIMELY	Yes	NA
0122HONGV00280	CONNECT	AT 122EH-16 FLNG	01/12/2007	1,205	NA	Not a Valve	Not a Valve	Not a Valve	Not a Valve	01/18/2007	TIMELY	Yes	NA
0122HONGV00284	CONNECT	AT 122EH-10 FLNG	01/09/2007	3,856	01/12/2007	Not a Valve	Not a Valve	Not a Valve	Not a Valve	01/18/2007	TIMELY	Yes	NA
0122HONGV00286	CONNECT	AT 122EH-10 FLNG	01/12/2007	979	02/20/2007	Not a Valve	Not a Valve	Not a Valve	Not a Valve	01/18/2007	TIMELY	Yes	NA
0122HONGV00298	CONNECT	AT 122EH-10 FLNG	01/12/2007	978	02/20/2007	Not a Valve	Not a Valve	Not a Valve	Not a Valve	01/18/2007	TIMELY	Yes	NA
0122HONGV00307	CONNECT	AT 122EH-10 FLNG	01/09/2007	1,044	02/20/2007	Not a Valve	Not a Valve	Not a Valve	Not a Valve	01/18/2007	TIMELY	Yes	NA
0122HONGV00309	CONNECT	AT 122EH-9 FLNG	01/12/2007	1,284	03/07/2007	Not a Valve	Not a Valve	Not a Valve	Not a Valve	01/18/2007	TIMELY	Yes	NA
0122HONGV00310	CONNECT	AT 122EH-9	01/12/2007	690	03/07/2007	Not a Valve	Not a Valve	Not a Valve	Not a Valve	01/18/2007	TIMELY	Yes	NA
0122HONGV00311	CONNECT	AT 122EH-9	01/12/2007	1,239	02/20/2007	Not a Valve	Not a Valve	Not a Valve	Not a Valve	01/18/2007	TIMELY	Yes	NA
0122HONGV00347	VALVE	S SIDE UNDER 122DH-1B	08/19/2006	1,330	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	09/01/2006	TIMELY	Yes	NA
0122HONGV00367	VALVE	TOP OF 122DH-1A	12/06/2006	784	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	12/21/2006	TIMELY	Yes	NA
0122HONGV00376	VALVE	TOP OF 122DH-1A HPB	12/06/2006	658	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	12/21/2006	TIMELY	Yes	NA
0122HONGV00394	VALVE	TOP OF 122DH-1B OVER N. RAIL	07/20/2007	616	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	08/03/2007	TIMELY	Yes	NA
0122HONGV00395	VALVE	TOP OF 122DH-1B	10/11/2007	16,100	10/25/2007	Tighten packing	5,820	10/11/2007	TIMELY	10/26/2007	TIMELY	Yes	NA
						Tighten packing	2,825	10/16/2007	TIMELY				
						Tighten packing	1,064	10/18/2007	TIMELY				
						Sealant	9,396	10/22/2007	TIMELY				
						Inject	14,700	10/25/2007	TIMELY				
0122HONGV00471	VALVE	4FT N AND 20 FT HIGH OF 122GH-6A SUB LANDING	12/10/2007	574	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	12/14/2007	TIMELY	Yes	NA

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Component Number	Type	Description	Initial Inspection Date	Concentration (ppmv)	Date leaking > 10,000 ppmv	For valves leaking > 10,000 ppmv				Date placed on Delay of Repair	Placed on Delay of Repair by Unit Supervisor w/in 30 days?	Is LDAR monitoring continuing while on Delay of Repair	For pumps, were best efforts used to isolate and repair?
						Repair Method	Monitoring results	Date of repair	If injection or equivalent, timely? (i.e., injection or equivalent within 30 days)				
0122HONGV00554	VALVE	N SIDE OF 122DU-19	02/09/2007	786	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	02/23/2007	TIMELY	Yes	NA
0122HONGV00560	VALVE	N SIDE OF 122DU-18 LPB	05/14/2008	574	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	05/23/2008	TIMELY	Yes	NA
0122HONGV00564	VALVE	NE SIDE OF 122DU-19	07/17/2008	1,980	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	08/01/2008	TIMELY	Yes	NA
0122HONGV00605	VALVE	TOP OF 122DU-18 HPB	05/14/2008	791	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	05/23/2008	TIMELY	Yes	NA
0122HONGV00652	VALVE	N SIDE OF 122EH-5 2ND LANDING	11/20/2006	622	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	12/04/2006	TIMELY	Yes	NA
0122HONGV00667	RELIEF	PRV E SIDE OF 122DP-2 TOP LANDING	10/17/2008	617	NA	Not a Valve	Not a Valve	Not a Valve	Not a Valve	10/30/2008	TIMELY	Yes	NA
0122HONGV00721	VALVE	SW SIDE OF 122EU-25 LANDING 3	05/19/2008	657	na	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	06/03/2008	TIMELY	Yes	NA
0122HONGV00738	VALVE	CTV 122LV-2766 ON W SIDE OF 122DU-2 AT 3RD LANDING	06/19/2006	2,101	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	06/27/2006	TIMELY	Yes	NA
0122HONGV00832	VALVE	E SIDE OF 122EH-4 TOP OF SG	07/24/2008	5,457	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	11/02/2006	TIMELY	Yes	NA
0122HONGV00833	VALVE	E SIDE OF 122EH-4 TOP OF SG	10/18/2006	611	10/26/2006	Steam packing	621	10/18/2006	TIMELY	11/02/2006	TIMELY	Yes	NA
						Previous repair	2,033	10/20/2006	TIMELY				
						Previous repair	1,988	10/23/2006	TIMELY				
						Previous repair	1,824	10/24/2006	TIMELY				
						Tighten packing	1,301	10/25/2006	TIMELY				
						Previous repair	32,000	10/26/2006	TIMELY				
						Tighten packing	688	10/27/2006	TIMELY				
						Previous repair	15,900		TIMELY				
						Previous repair	1,336	10/30/2006	TIMELY				
						Inject	846	11/01/2006	TIMELY				
						Previous repair	2,883	11/02/2006	TIMELY				
0122HONLL00052	PUMP	PUMP 122GH-1	05/13/2008	1,314	NA	Not a Valve	Not a Valve	Not a Valve	Not a Valve	05/28/2008	TIMELY	Yes	Yes
0122HONLL00805	VALVE	BETWEEN 3RD AND 4TH LANDING OF 122DH-1	08/31/2006	31,800	08/31/2006	Tighten packing	2,761	09/01/2006	TIMELY	09/14/2006	TIMELY	Yes	NA
						Previous repair	9,373	09/05/2006	TIMELY				
						Tighten packing	15,000	09/12/2006	TIMELY				
						Previous repair	808	09/13/2006	TIMELY				
0122HONLL00860	VALVE	PUMP 122GH-1A	06/18/2008	1,124	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	07/02/2008	TIMELY	Yes	NA
0122HONLL00958	CONNECT	E SIDE OF EH-1 ON CTL 22FV-201 (SCREWED FITTING)	09/30/2008	72,000	09/30/2008	Not a Valve	Not a Valve	Not a Valve	Not a Valve	10/13/2008	TIMELY	Yes	NA
0122HONLL00960	VALVE	CTL 122FRC-201 E SIDE OF 122EH-1	05/10/2008	545	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	05/23/2008	TIMELY	Yes	NA
0122HONLL00975	VALVE	BY CTL 122FV-223 W OF 122DH-E CHK	06/10/2009	895	06/13/2009	Steam	1,453	06/10/2009	TIMELY	06/19/2009	TIMELY	Yes	NA
						Tightened	988	06/12/2009					
						Applied sealant	14,900	06/13/2009					
						Previous repair	30,500	06/17/2009					
						Leak source is a screwed fitting that cannot be injected.							

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This is a list of those items currently on the Delay of Repair list (as of end of reporting period), placed there since February 28, 2006.

This is a list of those items currently on the Delay of Repair list (as of end of reporting period), placed here due to Category 2.													
Component Number	Type	Description	Initial Inspection Date	Concentration (ppmv)	Date leaking > 10,000 ppmv	For valves leaking > 10,000 ppmv				Date placed on Delay of Repair	Placed on Delay of Repair by Unit Supervisor w/in 30 days?	Is LDAR monitoring continuing while on Delay of Repair	For pumps, were best efforts used to isolate and repair?
						Repair Method	Monitoring results	Date of repair	If injection or equivalent, timely? (i.e., injection or equivalent within 30 days)				
0122HONLL01021	VALVE	BY 122LV-805 W OF 122EH-3 LPB	07/10/2007	58,500	07/10/2007	Steam packing	17,500	07/10/2007	TIMELY	07/25/2007	TIMELY	Yes	NA
						Tighten packing	6,763	07/13/2007	TIMELY				
						Steam packing	3,537	07/19/2007	TIMELY				
						Tighten packing	1,261	07/20/2007	TIMELY				
						Previous repair	15,400	07/25/2007	TIMELY				
						Valve had previously been injected.							
0122HONLL01061	VALVE	SE OF 122GH-4A ORIFICE TAP	09/19/2006	1,565	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	10/05/2006	TIMELY	Yes	NA
0122HONLL01062	VALVE	S OF 122GH-4A OH ORIFICE TAP	09/17/2007	1,187	09/25/2007	Steam packing	1,262	09/17/2007	TIMELY	09/27/2007	TIMELY	Yes	NA
						Re-Inject	1,878	09/22/2007	TIMELY		TIMELY	Yes	
						Tighten packing	69,000	09/25/2007	TIMELY		TIMELY	Yes	
						Valve had previously been injected.					TIMELY	Yes	
0122HONLL01112	VALVE	PUMP 122GH-4A	10/03/2006	15,398	10/03/2006	Inject	2,204	10/07/2006	TIMELY	10/18/2006	TIMELY	Yes	NA
						Sealant	3,625	10/09/2006	TIMELY				
						Previous repair	2,165	10/10/2006	TIMELY				
						Sealant	573	10/10/2006	TIMELY				
						Previous repair	844	10/11/2006	TIMELY				
						Previous repair	2,186	10/13/2006	TIMELY				
						Tighten fitting	748	10/16/2006	TIMELY				
						Re-Inject	3,451	10/17/2006	TIMELY				
0122HONLL01146	VALVE	BETWEEN 3RD AND 4TH LANDING AT 122DH-3	01/29/2008	629	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	02/13/2008	TIMELY	Yes	NA
0122HONLL01148	VALVE	AT 122DH-3 3RD LANDING OUTSIDE LADDER	08/31/2006	7,434	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	09/14/2006	TIMELY	Yes	NA
0122HONLL01152	VALVE	1ST LANDING OF 122DH-3 BLOCK VALVE FOR STEAMOUT LINE	07/07/2008	615	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	07/16/2008	TIMELY	Yes	NA
0122HONLL01158	VALVE	W SIDE OF 122DH-3 ABOVE SG	08/19/2006	785	08/23/2006	Tighten	530	08/19/2006	TIMELY	09/01/2006	TIMELY	Yes	NA
						Previous repair	840	08/21/2006	TIMELY				
						Previous repair	629	08/22/2006	TIMELY				
						Previous repair	10,600	08/23/2006	TIMELY				
						Tighten	541	08/30/2006	TIMELY				
						Previous repair	665	09/01/2006	TIMELY				
						Previous repair	621	09/05/2006					
						Previous repair	576	09/06/2006					
0122HONLL01186	VALVE	AT 122EH-6 SG LPB	07/14/2006	10,200	07/14/2006	Tighten	7,130	07/14/2006	TIMELY	08/01/2006	TIMELY	Yes	NA
						Previous repair	9,186	07/17/2006	TIMELY				
						Previous repair	76,000	07/18/2006	TIMELY				
						Previous repair	548	07/19/2006	TIMELY				
						Previous repair	1,588	07/20/2006	TIMELY				
						Previous repair	18,700	07/21/2006	TIMELY				
						Previous repair	3,500	07/24/2006	TIMELY				
						Tighten packing	2,986	07/25/2006	TIMELY				
						Inject	31,300	07/26/2006	TIMELY				

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This is a list of those items currently on the Delay or Repair list (as of end of reporting period), placed here since February 26, 2006.																	
Component Number	Type	Description	Initial Inspection Date	Concentration (ppmv)	Date leaking > 10,000 ppmv	For valves leaking > 10,000 ppmv				Date placed on Delay of Repair	Placed on Delay of Repair by Unit Supervisor w/in 30 days?	Is LDAR monitoring continuing while on Delay of Repair	For pumps, were best efforts used to isolate and repair?				
						Repair Method	Monitoring results	Date of repair	If injection or equivalent, timely? (i.e., injection or equivalent within 30 days)								
0122HONLL01192	VALVE	AT 122EH-6 SG	06/18/2008	2,409	06/18/2008	Tighten packing	21,800	06/18/2008	TIMELY	07/02/2008	TIMELY	Yes	NA				
						Sealant	157,000	06/20/2008	TIMELY								
						Previous repair	5,869	07/02/2008	TIMELY								
						Previous repair	80,400	07/02/2008	TIMELY								
						Leak source is screwed injector fitting from prior injection. Cannot be injected.											
0122HONLL01230	CONECT	BY EH-15 AND EH-12 N END	04/25/2007	3,247	05/10/2007	Not a Valve	Not a Valve	Not a Valve	Not a Valve	05/10/2007	TIMELY	Yes	NA				
0122HONLL01231	CONECT	BY EH-15 AND EH-12 N END	06/08/2009	3,260	NA	Not a Valve	Not a Valve	Not a Valve	Not a Valve	06/19/2009	TIMELY	Yes	NA				
0122HONLL01362	VALVE	AT CTL 122LV-813 N OF 122FH-7	10/11/2007	565	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	10/26/2007	TIMELY	Yes	NA				
0122HONLL01429	VALVE	AT 122F-27 SG	05/14/2008	585	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	05/28/2008	TIMELY	Yes	NA				
0122HONLL01562	VALVE	E OF 122GH-6A	01/30/2008	64,100	01/30/2008	Tighten plug	1,786	01/30/2008	TIMELY	02/13/2008	TIMELY	Yes	NA				
						Applied sealant	66,900	02/07/2008	TIMELY								
						Tighten plug	7,454	02/11/2008	TIMELY								
						Leak source is plug. Cannot be injected.											
0122HONLL01568	VALVE	AT CTL FV-210 E OF 122GH-6A LPB	05/13/2008	180,100	05/13/2008	Tighten plug	208,300	05/13/2008	TIMELY	05/28/2008	TIMELY	Yes	NA				
						Replaced plug	546	05/16/2008	TIMELY								
						Tighten plug	100,000	05/20/2008	TIMELY								
						Leak source is plug. Cannot be injected											
0122HONLL01596	VALVE	AT PUMP 122GH-3A	06/06/2007	523	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	06/19/2007	TIMELY	Yes	NA				
0122HONLL01606	VALVE	PUMP 122GH-3A	07/21/2006	1,555	07/25/2006	Steam seal	1,267	07/24/2006	TIMELY	08/03/2006	TIMELY	Yes	NA				
						Previous repair	21,200	07/25/2006	TIMELY								
						Previous repair	37,300	08/01/2006	TIMELY								
						Previous repair	12,400	08/02/2006	TIMELY								
						Previous repair	16,000	08/03/2006	TIMELY								
						This valve had previously been injected on 6/23/06 and 6/26/06. Those injections did not hold											
0122HONLL01699	VALVE	PUMP 122GU-19B	04/01/2008	2,008	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	04/16/2008	TIMELY	Yes	NA				
0122HONLL01728	VALVE	AT 122TKA-1 UDEX CHARGE	08/24/2006	1,068	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	09/08/2006	TIMELY	Yes	NA				
0122HONLL01750	CONECT	CENTER OF TKA-1 ON TOP FLNG	04/07/2009	100,000	04/07/2009	Not a Valve	Not a Valve	Not a Valve	Not a Valve	04/22/2009	TIMELY	Yes	NA				
0122HONLL01886	VALVE	NE SIDE OF 122TKA-4	08/24/2006	9,800	08/24/2006	Tighten flange	10,300	08/24/2006	TIMELY	09/06/2006	TIMELY	Yes	NA				
						Sealant	4,911	08/31/2006	TIMELY								
						Previous repair	4,921	09/05/2006	TIMELY								
						Previous repair	14,100	09/06/2006	TIMELY								
						Leak source was the flange of the valve											
0122HONLL02170	CONECT	W SIDE OF DU-1 TOWER 2ND LANDING FROM EU-1	10/28/2008	17,000	10/28/2008	Not a Valve	Not a Valve	Not a Valve	Not a Valve	11/12/2008	TIMELY	Yes	NA				
0122HONLL02268	VALVE	E SIDE OF 122EU-2a EXCHANGER 7 FT OH	07/21/2008	3,362	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	08/01/2008	TIMELY	Yes	NA				
0122HONLL02271	CONECT	E SIDE OF EU-2 EXCHANGER UNION	04/25/2008	2,106	NA	Not a Valve	Not a Valve	Not a Valve	Not a Valve	05/09/2008	TIMELY	Yes	NA				
0122HONLL02306	CONECT	N SIDE OF EU-2 EXCHANGER HEADER BOX	04/29/2009	3,915	NA	Not a Valve	Not a Valve	Not a Valve	Not a Valve	05/14/2009	TIMELY	Yes	NA				
0122HONLL02309	CONECT	N SIDE OF EU-2 EXCHANGER HEADER BOX	04/19/2007	1,011	NA	Not a Valve	Not a Valve	Not a Valve	Not a Valve	05/04/2007	TIMELY	Yes	NA				
0122HONLL02467	VALVE	W SIDE OF 122EP-10 EXCHANGER 12 FT UP	08/26/2006	2,867	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	09/09/2006	TIMELY	Yes	NA				

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Component Number	Type	Description	Initial Inspection Date	Concentration (ppmv)	Date leaking > 10,000 ppmv	For valves leaking > 10,000 ppmv				Date placed on Delay of Repair	Placed on Delay of Repair by Unit Supervisor w/in 30 days?	Is LDAR monitoring continuing while on Delay of Repair	For pumps, were best efforts used to isolate and repair?
						Repair Method	Monitoring results	Date of repair	If injection or equivalent, timely? (i.e., injection or equivalent within 30 days)				
0122HONLL02468	VALVE	W SIDE OF EP-10 12FT UP	10/19/2006	6,107	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	11/03/2006	TIMELY	Yes	NA
0122HONLL02497	CONNECT	N SIDE OF BTMS COOLER AND EP-12 TOP LANDING UNION	07/15/2009	17,200	NA	Not a Valve	Not a Valve	Not a Valve	Not a Valve	07/30/2009	TIMELY	Yes	NA
0122HONLL02724	CONNECT	N SIDE OF 22EU-16 BETWEEN TUBES FLNG	02/27/2008	569	NA	Not a Valve	Not a Valve	Not a Valve	Not a Valve	03/13/2008	TIMELY	Yes	NA
0122HONLL02727	CONNECT	N SIDE OF 22EU-16	04/29/2009	757	NA	Not a Valve	Not a Valve	Not a Valve	Not a Valve	05/14/2009	TIMELY	Yes	NA
0122HONLL02751	CONNECT	N SIDE OF 22EU-16	04/29/2009	3,675	NA	Not a Valve	Not a Valve	Not a Valve	Not a Valve	05/14/2009	TIMELY	Yes	NA
0122HONLL02755	VALVE	N SIDE OF 122EU-16-LPB	08/19/2006	3,908	08/23/2006	Tighten bonnet	3165	08/19/2006	TIMELY	09/01/2006	TIMELY	Yes	NA
						Previous repair	3130	08/21/2006	TIMELY				
						Previous repair	4770	08/22/2006	TIMELY				
						Previous repair	200000	08/23/2006	TIMELY				
						Previous repair	4130	09/01/2006	TIMELY				
						Previous repair	1790	09/05/2006	TIMELY				
						Previous repair	6275	09/06/2006	TIMELY				
						Previous repair	4380	09/07/2006	TIMELY				
0122HONLL02757	VALVE	N SIDE OF EU-16 LPB	04/07/2008	741	04/09/2008	Leak source was valve bonnet - not injectable							
						Tighten plug	3048	04/07/2008	TIMELY	04/16/2008	TIMELY	Yes	NA
						Tighten plug	100000	04/09/2008	TIMELY				
						Tighten plug	77115	04/14/2008	TIMELY				
						Tighten plug	732	04/15/2008	TIMELY				
0122HONLL02765	CONNECT	N SIDE OF 22EU-16	10/27/2008	2,916	10/27/2008	Leak source was plug - not injectable							
						Not a Valve	Not a Valve	Not a Valve	Not a Valve	11/05/2008	TIMELY	Yes	NA
						Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	10/24/2006	TIMELY	Yes	NA
						Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	04/25/2008	TIMELY	Yes	NA
						Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	09/01/2006	TIMELY	Yes	NA
0122HONLL02901	VALVE	ON CTL PV-384 TOP OF FH-10	04/11/2008	8,244	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	04/25/2008	TIMELY	Yes	NA
0122HONLL02904	VALVE	AT CTL 122PV-384 TOP OF 122FH-10	08/21/2006	16,700	08/21/2006	Tighten flange	3,342	08/21/2006	TIMELY	09/01/2006	TIMELY	Yes	NA
						Previous repair	3,800	08/22/2006	TIMELY				
						Previous repair	20,000	08/23/2006	TIMELY				
						Previous repair	2,265	09/01/2006	TIMELY				
						Previous repair	25,000	09/05/2006					
						Previous repair	4,012	09/06/2006					
0122HONLL03105	CONNECT	4 FT BELOW W SIDE OF 122EP-4 UNION	04/29/2008	5,016	04/29/2008	Not a Valve	Not a Valve	Not a Valve	Not a Valve	05/08/2008	TIMELY	Yes	NA
						Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	05/13/2008	TIMELY	Yes	NA
0122HONLL03117	VALVE	5 FT S OF 122GP-5A PUMP 20FT OH ORIFICE TAPS	04/28/2008	772	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	05/13/2008	TIMELY	Yes	NA
0122HONLL03176	CONNECT	UNDERSIDE OF DU-18 FLNG	10/27/2008	23,500	10/27/2008	Not a Valve	Not a Valve	Not a Valve	Not a Valve	11/07/2008	TIMELY	Yes	NA
0122HONLL03183	CONNECT	UNDERSIDE OF DU-19 FLNG	10/27/2008	3,350	NA	Not a Valve	Not a Valve	Not a Valve	Not a Valve	11/07/2008	TIMELY	Yes	NA
0122HONLL03419	CONNECT	UNDER SG AT 122DU-22 1ST LANDING	07/22/2009	10,700	NA	Not a Valve	Not a Valve	Not a Valve	Not a Valve	08/05/2009	TIMELY	Yes	NA
0122HONLL03451	VALVE	W SIDE OF 122DU-22 10FT OH	12/05/2006	785	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	12/20/2006	TIMELY	Yes	NA
0122HONLL03471	VALVE	W OF 122DU-22 N SIDE OF CTL 122FV-149	07/18/2006	1,127	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	08/02/2006	TIMELY	Yes	NA

**ATTACHMENT 9. Appendix C**  
**Delay of Repair Information**  
**[130(b)(vii)]**

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**Delay of Repair List**

This is a list of those items currently on the Delay of Repair list (as of end of reporting period), placed there since February 28, 2006.

Component Number	Type	Description	Initial Inspection Date	Concentration (ppmv)	Date leaking > 10,000 ppmv	For valves leaking > 10,000 ppmv				Date placed on Delay of Repair	Placed on Delay of Repair by Unit Supervisor w/in 30 days?	Is LDAR monitoring continuing while on Delay of Repair	For pumps, were best efforts used to isolate and repair?
						Repair Method	Monitoring results	Date of repair	If injection or equivalent, timely? (i.e., injection or equivalent within 30 days)				
0122HONLL03473	VALVE	W SIDE OF 122DU-22 N OF CTL 122LV-149 ORIFICE TAP FOR 122FT-2241	07/23/2007	2,172	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	08/06/2007	TIMELY	Yes	NA
0122HONLL03480	VALVE	S SIDE OF CTL 122LV-149 W OF 122DU-22	07/11/2007	748	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	07/25/2007	TIMELY	Yes	NA
0122HONLL03485	VALVE	W SIDE OF DU-22 N SIDE OF BOX	04/04/2008	812	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	04/21/2008	TIMELY	Yes	NA
0122HONLL03621	VALVE	S SIDE OF 122GU-16A CHK	06/10/2008	593	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	06/24/2008	TIMELY	Yes	NA
0122HONLL04136	VALVE	10 FT HIGH N SIDE OF EXCH 122EP-8	05/17/2008	1,530	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	05/29/2008	TIMELY	Yes	NA
0122HONLL04299	CONNECT	S SIDE OF EU-126 EXCHANGER HEAD	09/25/2007	100,000+	09/25/2007	Not a Valve	Not a Valve	Not a Valve	Not a Valve	10/10/2007	TIMELY	Yes	NA
0122HONLL04314	VALVE	BELOW E SIDE OF EU-24 IN FT-2263	04/29/2008	737	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	05/13/2008	TIMELY	Yes	NA
0122HONLL04315	VALVE	BELOW E SIDE OF EU 24 ORIFICE TAP OF FT-2263	04/29/2008	33,900	04/29/2008	Steam packing	30,700	04/29/2008	TIMELY	05/13/2008	TIMELY	Yes	NA
						Tighten packing	3,707	05/05/2008	TIMELY				
						Applied sealant	1,912	05/07/2008	TIMELY				
0122HONLL04316	VALVE	BELOW E SIDE OF EU-24 ORIFICE TAP OF FT 2263	04/29/2008	19,400	04/29/2008	Tighten packing	1,553	04/29/2008	TIMELY	05/13/2008	TIMELY	Yes	NA
						Tighten packing	1,860	05/05/2008	TIMELY				
						Applied sealant	1,930	05/07/2008	TIMELY				
0122HONLL04318	VALVE	E SIDE OF EU-24 UPSTREAM BLOCK VALVE ON CTL 22FR-2263	04/29/2008	1,251	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	05/14/2008	TIMELY	Yes	NA
0122NSPSGV00380	VALVE	ON CTL 122PRC-2308A N OF 122EU-2	10/10/2006	2,198	09/26/2006	Steam packing	100,000	09/26/2006	TIMELY	10/11/2006	TIMELY	Yes	NA
						Previous repair	1,595	09/28/2006	TIMELY				
						Previous repair	1,001	09/29/2006	TIMELY				
						Previous repair	1,001	10/02/2006	TIMELY				
						Previous repair	782	10/03/2006	TIMELY				
						Previous repair	1,203	10/04/2006	TIMELY				
						Previous repair	993	10/05/2006	TIMELY				
						Previous repair	1,506	10/06/2006	TIMELY				
						Previous repair	2,415	10/09/2006	TIMELY				
0122NSPSGV00001	COMPR	COMPRESSOR 122GB-1 W OF SATELLITE BCT	10/26/2009	5,072	NA	Not a Valve	Not a Valve	Not a Valve	Not a Valve	11/06/2009	TIMELY	Yes	NA
0122NSPSGV0107	VALVE	FT-110 ORIFICE TAP 15 FT SE OF 122F-29 12FT OH	01/29/2008	1,056	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	02/13/2008	TIMELY	Yes	NA
0122NSPSGV00117	VALVE	S OF F-6A	02/14/2008	510	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	02/28/2008	TIMELY	Yes	NA



**ATTACHMENT 9, Appendix C**  
**Delay of Repair Information**  
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**Delay of Repair List**

This is a list of those items currently on the Delay of Repair list (as of end of reporting period), placed there since February 28, 2006.

This is a list of those items currently on the Delay or Repair list (as of end of reporting period), placed here since February 28, 2009.													
Component Number	Type	Description	Initial Inspection Date	Concentration (ppmv)	Date leaking > 10,000 ppmv	For valves leaking > 10,000 ppmv				Date placed on Delay of Repair	Placed on Delay of Repair by Unit Supervisor w/in 30 days?	Is LDAR monitoring continuing while on Delay of Repair	For pumps, were best efforts used to isolate and repair?
						Repair Method	Monitoring results	Date of repair	If injection or equivalent, timely? (i.e., injection or equivalent within 30 days)				
0122NSPSLL00117	VALVE	W SIDE OF 122EP-2	07/19/2006	29,400	07/19/2006	Steam packing	30,100	07/19/2006	TIMELY	08/03/2006	TIMELY	Yes	NA
						Previous repair	2,608	07/20/2006	TIMELY				
						Previous repair	10,700	07/21/2006	TIMELY				
						Previous repair	5,200	07/24/2006	TIMELY				
						Previous repair	2,106	07/25/2006	TIMELY				
						Previous repair	11,700	08/01/2006	TIMELY				
						Previous repair	9,806	08/02/2006	TIMELY				
						Previous repair	11,800	08/03/2006	TIMELY				
						Leak source in the injector itself							
AVO-0108	CONECT	ON FUEL GAS LINE UNDER 122B-1, CLAY TOWER CHARGE HEATER	04/14/2009	67,800	04/14/2009	Not a Valve	Not a Valve	Not a Valve	Not a Valve	04/28/2009	TIMELY	Yes	NA
0123CR1GV00279	VALVE	NE SIDE OF B-2 3RD LEVEL	11/10/2009	2,034	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	11/25/2009	TIMELY	Yes	NA
0123CR1GV00415	VALVE	S SIDE OF EXCHANGER 23D-4 IN MIDDLE 15FT OV	05/06/2008	2,116	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	05/20/2008	TIMELY	Yes	NA
0125NSPSGV00114	VALVE	BOTTOM OF B-2 BURNER 11 HPB	02/05/2009	1,670	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	02/20/2009	TIMELY	Yes	NA
0125NSPSGV00218	VALVE	W END OF BATT LIMITS 1ST LANDING	08/24/2007	2,527	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	09/08/2007	TIMELY	Yes	NA
0125NSPSGV00317	VALVE	BETWEEN 25B-1 AND 25D-1 BETWEEN PS41 AND PS40 CHK	05/27/2009	10,500	05/27/2009	Steamed	38,500	05/27/2009	TIMELY	06/11/2009	TIMELY	Yes	NA
						Tightened	5,000	05/29/2009	TIMELY				
						Tightened	27,700	06/11/2009	TIMELY				
						Valve is a check valve. Check valves cannot be injected.							
0125NSPSGV00535	VALVE	WEST SIDE OF COMPRESSOR 125GB-5 ON LANDING	07/14/2008	41,000	07/14/2008	Steamed	no remonitor that day	07/14/2008	TIMELY	07/28/2008	TIMELY	Yes	NA
						Applied sealant	13000	07/18/2008	TIMELY				
						Previous repair	100000	07/19/2008	TIMELY				
						Applied sealant	100000	07/22/2008	TIMELY				
						Leak source was a screwed fitting (union) on valve. Not injectable.							
110806	VALVE	102 W SIDE BATTERY LIITS BY PS02 OH BOTTOM ROW	03/24/2008	5,981	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	04/08/2008	TIMELY	Yes	NA
110817	VALVE	102 W SIDE BATTERY LIMITS BY PS02 OH BOTTOM LEVEL HPB	04/23/2009	766	na	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	05/06/2009	TIMELY	Yes	NA
15586	VALVE	W SIDE OF TK 432 IN PIPEROW E OF 331G-9A OH CHAIN OPERATED	07/30/2009	100,000	07/30/2009	Tightened packing	100000	07/30/2009	TIMELY	08/14/2009	TIMELY	Yes	NA
						Tightened packing	35000	08/03/2009	TIMELY				
						Injected	100000	08/06/2009	TIMELY				
						Steam	8497	08/07/2009	TIMELY				
						Injected	15000	08/10/2009	TIMELY				
						Injected	1750	08/12/2009	TIMELY				
						Previous repair	3154	08/13/2009	TIMELY				
						Previous repair	992	08/14/2009	TIMELY				

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**Delay of Repair List**

This is a list of those items currently on the Delay of Repair list (as of end of reporting period), placed there since February 28, 2006.

This is a list of those items currently on the Delay of Repair list (as of end of reporting period), placed there since February 28, 2000.													
Component Number	Type	Description	Initial Inspection Date	Concentration (ppmv)	Date leaking > 10,000 ppmv	For valves leaking > 10,000 ppmv				Date placed on Delay of Repair	Placed on Delay of Repair by Unit Supervisor w/in 30 days?	Is LDAR monitoring continuing while on Delay of Repair	For pumps, were best efforts used to isolate and repair?
						Repair Method	Monitoring results	Date of repair	If injection or equivalent, timely? (i.e., injection or equivalent within 30 days)				
16523	VALVE	SE OF 334 LOADING RACK OH DTM BY PS22	09/14/2009	28,200	09/14/2009	Tightened packing	38700	09/14/2009	TIMELY	09/29/2009	TIMELY	Yes	NA
						Tightened packing	1285	09/16/2009	TIMELY				
						Tightened packing	3583	09/23/2009	TIMELY				
0212NSPSGV00024	VALVE	212TV-4532 ON E SIDE OF 212E-407 E OF COMPRESSOR HOUSE	09/05/2006	58,000	09/05/2006	Steam seal	61,000	09/05/2006	TIMELY	09/25/2006	TIMELY	Yes	NA
						Previous repair	1,204	09/08/2006	TIMELY				
						Tighten packing	5,444	09/12/2006	TIMELY				
						Previous repair	8,460	09/14/2006	TIMELY				
						Previous repair	11,800	09/18/2006	TIMELY				
						Tighten packing	20,400	09/19/2006	TIMELY				
						Previous repair	17,000	09/20/2006	TIMELY				
						Control valve can not inject			TIMELY				
						Rebuilt during fall '06	1,856	12/05/2006	TIMELY				
						TA							
						Previous repair	934	12/07/2006	TIMELY				
						Tighten packing	826	12/13/2006	TIMELY				
						Previous repair	907	12/14/2006	TIMELY				
						Previous repair	819	12/15/2006	TIMELY				
						Tighten packing	1,185	12/19/2006	TIMELY				
						Previous repair	930	12/20/2006	TIMELY				
Previous repair	1,017	12/21/2006	TIMELY										
0212NSPSGV00099	VALVE	W SIDE OF F-449 7 FT OFF THE GROUND PSI GAGE SW SIDE OF UNIT	09/15/2009	1,101	09/16/2009	Steamed	692	09/15/2009	TIMELY	09/28/2009	TIMELY	Yes	NA
						Tightened plug	1,893	09/16/2009	TIMELY				
						Tightened plug	1,991	09/16/2009	TIMELY				
						Tightened plug	4,950	09/16/2009	TIMELY				
						Applied sealant	10,400	09/16/2009	TIMELY				
						Tightened plug	13,500	09/17/2009	TIMELY				
						Applied sealant	970	09/18/2009	TIMELY				
						Tightened plug	862	09/21/2009	TIMELY				
0212NSPSGV00124	VALVE	D-403A 3FT. NW OF D-403A 4 FT OFF THE GROUND	06/23/2009	5,536	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	07/09/2009	TIMELY	Yes	NA
0212NSPSGV00171	VALVE	D-402B ON CTL CV-996D W SIDE OF D-403B	07/14/2009	1,391	07/21/2009	Tightened fitting	1,361	07/14/2009		07/28/2009	TIMELY	Yes	NA
						Applied sealant	1,867	07/16/2009					
						Applied sealant	4,300	07/17/2009					
						Applied sealant	613	07/20/2009					
						Applied sealant	16,000	07/21/2009					
						Previous repair	14,900	07/27/2009					
						Applied sealant	16,100	07/28/2009					
						Leak source was screwed fitting on valve, not injectable							

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Component Number	Type	Description	Initial Inspection Date	Concentration (ppmv)	Date leaking > 10,000 ppmv	For valves leaking > 10,000 ppmv				Date placed on Delay of Repair	Placed on Delay of Repair by Unit Supervisor w/in 30 days?	Is LDAR monitoring continuing while on Delay of Repair	For pumps, were best efforts used to isolate and repair?
						Repair Method	Monitoring results	Date of repair	If injection or equivalent, timely? (i.e., injection or equivalent within 30 days)				
0212NSPSGV00265	VALVE	CTV PV-471A N SIDE OF FF E-314B-1 2ND LANDING	12/05/2006	59,500	12/05/2006	Tighten	100,000	12/13/2006	TIMELY	01/04/2007	TIMELY	Yes	NA
						Tighten	28,700	12/13/2006	TIMELY				
						Tighten	2,769	12/19/2006	TIMELY				
						Previous repair	3,564	12/20/2006	TIMELY				
						Previous repair	4,206	12/21/2006	TIMELY				
						Previous repair	2,561	01/02/2006	TIMELY				
						Control valve - can not inject							
0212NSPSGV00332	VALVE	NE OF F-301 AT PS-10 ON PLATFORM	03/13/2008	9,175	03/13/2008	Tighten flange	10,300	03/13/2008	TIMELY	03/27/2008	TIMELY	Yes	NA
						Tighten flange	1,030	03/18/2008	TIMELY				
						Previous repair	9,753	03/27/2008	TIMELY				
						Leak source was flange -- not injectable.							
0212NSPSGV00472	VALVE	ON PRV DECK S SIDE OF COMPRESSOR HOUSE S SIDE OF F-440B 1ST GRADING OH	09/20/2007	518	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	10/05/2007	TIMELY	Yes	NA
0217NSPSGV00031	VALVE	TOP N SIDE OF 217D-7	10/04/2007	3,326	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	10/16/2007	TIMELY	Yes	NA
0217NSPSGV00088	VALVE	E SIDE OF 217G-15 OH	07/26/2007	29,100	07/26/2007	Tighten packing	17,000	07/31/2007	TIMELY	08/09/2007	TIMELY	Yes	NA
						Tighten packing	30,000	08/01/2007	TIMELY				
						Tighten packing	10,000	08/02/2007	TIMELY				
						Tighten packing	20,000	08/03/2007	TIMELY				
						Previous repair	873	08/06/2007	TIMELY				
						Tighten packing	1,112	08/08/2007	TIMELY				
						Leak source was plug on valve -- not injectable.							
0217NSPSGV00201	VALVE	5 FT W OF 217D-9 3RD LANDING HPB	07/10/2007	1,056	07/12/2007	Tighten plug	2,707	07/10/2007	TIMELY	07/25/2007	TIMELY	Yes	NA
						Tighten plug	56,900	07/12/2007	TIMELY				
						Replace plug	22,000	07/16/2007	TIMELY				
						Previous repair	55,200	07/25/2007	TIMELY				
						Leak source was plug on valve -- not injectable.							
0217NSPSGV00202	VALVE	CTV PV-444 5FT W OF 217E-19D2 1ST LANDING	10/07/2008	100,700	10/07/2008	Cleaned		10/07/2008	TIMELY	10/31/2008	TIMELY	Yes	NA
						Previous repair	18,300	10/08/2008	TIMELY				
						Previous repair	4,030	10/21/2008	TIMELY				
						Control valve - not injectable							
0217NSPSGV00204	VALVE	AT E-17 SW CORNER OF FIN FANS 1ST LANDING NW OF D-10	02/04/2008	1,759	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	02/07/2008	TIMELY	Yes	NA
0217NSPSGV00213	VALVE	S SIDE OF FF 2ND LANDING	07/17/2007	1,526	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	08/01/2007	TIMELY	Yes	NA
0217NSPSGV00401	VALVE	SE SIDE OF FF217E-8A 3RD LANDING	07/17/2007	687	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	08/01/2007	TIMELY	Yes	NA

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Component Number	Type	Description	Initial Inspection Date	Concentration (ppmv)	Date leaking > 10,000 ppmv	For valves leaking > 10,000 ppmv				Date placed on Delay of Repair	Placed on Delay of Repair by Unit Supervisor w/in 30 days?	Is LDAR monitoring continuing while on Delay of Repair	For pumps, were best efforts used to isolate and repair?				
						Repair Method	Monitoring results	Date of repair	If injection or equivalent, timely? (i.e., injection or equivalent within 30 days)								
0217NSPSGV00403	VALVE	CTV PV-307A SE SIDE OF FF 217E-8A 3RD LANDING	01/10/2008	146,100	01/10/2008	Steam packing	21,800	01/10/2008	TIMELY	01/25/2008	TIMELY	Yes	NA				
						Tighten packing	2,526	01/14/2008	TIMELY								
						Tighten packing	2,094	01/14/2008	TIMELY								
						Previous repair	1,329	01/15/2008	TIMELY								
						Previous repair	822	01/17/2008	TIMELY								
						Previous repair	993	01/20/2008	TIMELY								
						Previous repair	682	01/25/2008	TIMELY								
0217NSPSGV00554	VALVE	SE SIDE OF 217D-7 AT SG OH	09/10/2007	2,600	09/20/2007	Tighten fitting	1,950	09/10/2007	TIMELY	09/20/2007	TIMELY	Yes	NA				
						Tighten fitting	8,900	09/13/2007	TIMELY								
						Previous repair	18,200	09/20/2007	TIMELY								
						Sealant	30,000	09/21/2007	TIMELY								
						Leak source was a downstream screwed fitting on valve - not injectable.											
0217NSPSGV00555	VALVE	ON CTL FV-176	05/26/2006	7,998	06/01/2006	Tighten flange	7,800	05/26/2006	TIMELY	06/05/2006	TIMELY	Yes	NA				
						Previous repair	3,640	05/31/2006	TIMELY								
						Tighten packing	3,509	06/01/2006	TIMELY								
						Previous repair	30,500	06/02/2006	TIMELY								
						Previous repair	41,200	06/05/2006	TIMELY								
						Ball valve -- can not inject											
0217NSPSGV00556	VALVE	NE SIDE OF 217D-7 AT SG OH	10/24/2008	3,957	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	11/05/2008	TIMELY	Yes	NA				
0217NSPSGV00613	VALVE	SW SIDE OF F-103 AT SG	04/16/2008	1,237	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	05/01/2008	TIMELY	Yes	NA				
0217NSPSLL00168	VALVE	E SIDE OF G-20 OH FT 129	07/24/2007	16,800	07/24/2007	Steamed fitting	17,600	07/24/2007	TIMELY	08/01/2007	TIMELY	Yes	NA				
						Tighten fitting	20,500	07/27/2007	TIMELY								
						Leak source was a screwed fitting - not injectable.											
0217NSPSLL00180	VALVE	ON CTL FV-176 4 FT E OF 217G-11A	08/14/2007	6,200	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	08/29/2007	TIMELY	Yes	NA				
0217NSPSLL00187	VALVE	6FT W OF 217G-9A OH	04/22/2008	1,287	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	05/07/2008	TIMELY	Yes	NA				
0217NSPSLL00223	VALVE	N SIDE OF 217G-17 AT FT-158 OH	07/25/2007	9,139	07/25/2007	Steam packing	80,900	07/25/2007	TIMELY	08/01/2007	TIMELY	Yes	NA				
						Tighten packing	10,000	07/27/2007	TIMELY								
						Previous repair	6,900	08/02/2007	TIMELY								
						Tighten packing	2,900	08/02/2007	TIMELY								
0217NSPSLL00321	VALVE	E SIDE OF D-104 2ND LANDING	07/12/2006	1,216	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	07/24/2006	TIMELY	Yes	NA				
0217NSPSLL00362	VALVE	SW SIDE OF F-103 OH	01/14/2008	1,133	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	01/25/2008	TIMELY	Yes	NA				
0217NSPSLL00495	VALVE	NE SIDE OF 217D-401B	10/07/2009	2,500	10/09/2009	Tightened packing	1,253	10/07/2009	TIMELY	10/22/2009	TIMELY	Yes	NA				
						Steamed	4,500	10/07/2009	TIMELY								
						Tightened packing	6,600	10/07/2009	TIMELY								
						Applied sealant	1,900	10/07/2009	TIMELY								
						Applied sealant	11,000	10/09/2009	TIMELY								
						Applied sealant	100,000	10/12/2009	TIMELY								
						Applied sealant	100,000	10/12/2009	TIMELY								
						Applied sealant	100,000	10/13/2009	TIMELY								
						Previous repair	100,000	10/22/2009	TIMELY								
						Bonnet on valve was leaking and is not suitable for injection.											

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This is a list of those items currently on the Delay of Repair list (as of end of reporting period); please note and recheck by 2/28/2008.						For valves leaking > 10,000 ppmv				Date placed on Delay of Repair	Placed on Delay of Repair by Unit Supervisor w/in 30 days?	Is LDAR monitoring continuing while on Delay of Repair	For pumps, were best efforts used to isolate and repair?
Component Number	Type	Description	Initial Inspection Date	Concentration (ppmv)	Date leaking > 10,000 ppmv	Repair Method	Monitoring results	Date of repair	If injection or equivalent, timely? (i.e., injection or equivalent within 30 days)				
0217NSPSLL00620	VALVE	NE SIDE OF D-5 2ND LANDING	07/12/2006	1,616	07/25/2006	Tighten bonnet	2,093	07/12/2006	TIMELY	07/24/2006	TIMELY	Yes	NA
						Previous repair	1,250	07/13/2006	TIMELY				
						Previous repair	640	07/14/2006	TIMELY				
						Previous repair	893	07/17/2006	TIMELY				
						Previous repair	1,077	07/18/2006	TIMELY				
						Previous repair	566	07/19/2006	TIMELY				
						Previous repair	1,149	07/20/2006	TIMELY				
						Previous repair	643	07/21/2006	TIMELY				
						Inject	9,393	07/24/2006	TIMELY				
						Previous repair	184,500	07/25/2006					
						Leak source was bonnet of valve, injected only once because the leak was worsening							
0217NSPSLL00645	VALVE	SWITCH VALVE 217XV-1924 AT LOWER E SIDE OF 217D-401a ON PROPANE SKID	04/24/2008	790	na	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	05/09/2008	TIMELY	Yes	NA
0217NSPSLL00776	VALVE	3FT NW OF 217D-9 AT FT-141 OH	04/06/2006	66,600	04/06/2006	Tighten packing	2,724	04/10/2006	TIMELY	04/18/2006	TIMELY	Yes	NA
						Previous repair	3,025	04/11/2006	TIMELY				
						Previous repair	6,105	04/12/2006	TIMELY				
						Previous repair	5,115	04/13/2006	TIMELY				
						Previous repair	3,213	04/17/2006	TIMELY				
						Previous repair	7,099	04/18/2006	TIMELY				
0217NSPSLL00778	VALVE	3FT NW OF 217D-9 AT FT-141 OH	04/06/2006	96,400	04/06/2006	Tighten packing	2,876	04/10/2006	TIMELY	04/18/2006	TIMELY	Yes	NA
						Previous repair	3,417	04/11/2006	TIMELY				
						Previous repair	8,071	04/12/2006	TIMELY				
						Previous repair	5,724	04/13/2006	TIMELY				
						Previous repair	75,600	04/17/2006	TIMELY				
						Previous repair	57,700	04/18/2006	TIMELY				
0217NSPSLL00804	VALVE	ON CTL FV-127, NW SIDE OF E-17	07/13/2008	586	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	07/27/2007	TIMELY	Yes	NA
0217NSPSLL00805	VALVE	ON CTL FV-127 NW SIDE OF 217E-17	08/29/2006	5,373	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	09/13/2006	TIMELY	Yes	NA
0217NSPSLL00935	VALVE	ABOVE CTL FV-102 5 FT E OF G-4B AT FT-102 OH ORIFICE TAP	04/19/2008	530	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	05/01/2008	TIMELY	Yes	NA
0217NSPSLL00966	VALVE	W SIDE OF 217D-1	07/08/2008	1,114	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	07/23/2008	TIMELY	Yes	NA
0217NSPSLL01003	VALVE	TOP N SIDE OF 217E-7B OH	07/24/2007	2,900	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	08/09/2007	TIMELY	Yes	NA
0217NSPSLL01016	VALVE	AT G-6B	07/12/2007	1,308	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	07/27/2007	TIMELY	Yes	NA
0217NSPSLL01075	VALVE	E SIDE OF 217E-7A	10/04/2007	530	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	10/16/2007	TIMELY	Yes	NA
0217NSPSLL01100	RELIEF	PRV SV-031 TOP N SIDE OF 217E-7B OH	07/24/2007	11,000	07/24/2007	Steam	5,500	07/24/2007	TIMELY	08/08/2007	TIMELY	Yes	NA
						Previous repair	6,372	08/06/2007	TIMELY				
						Apply sealant	13,350	08/08/2007	TIMELY				
						Leak source is cap on PRV - not injectable							
0217NSPSLL01111	VALVE	ON CTL 217TV-515B E SIDE OF 217D-2	05/17/2007	675	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	05/31/2007	TIMELY	Yes	NA
0217NSPSLL01126	VALVE	W SIDE OF 217D-2 OH	08/09/2007	2,132	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	08/17/2007	TIMELY	Yes	NA

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						Repair Method	Monitoring results	Date of repair	If injection or equivalent, timely? (i.e., injection or equivalent within 30 days)				
0217NSPSLL01136	VALVE	BYPASS FOR CONTROL VALVE 217FV-109 5FT E OF 217G-11B	12/27/2006	720	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	01/11/2007	TIMELY	Yes	NA
0217NSPSLL01137	VALVE	ON CTL FV-109 5 FT E OF 217G-11B	07/11/2007	655	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	07/26/2007	TIMELY	Yes	NA
0217NSPSLL01531	VALVE	E SIDE OF D-9 OH CHAIN OPERATED	07/24/2007	2,586	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	08/09/2007	TIMELY	Yes	NA
0228NSPSLL00066	VALVE	E SIDE OF PUMP 228G-2 FCC BLENDING BLOCK FOR FILTER	02/13/2007	787	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	02/28/2007	TIMELY	Yes	NA
0228NSPSLL00115	VALVE	1FT W OF PUMP 28G-4	09/22/2006	5,004	09/22/2006	Tighten	17,900	09/22/2006	TIMELY	10/07/2006	TIMELY	Yes	NA
						Previous repair	2,605	09/27/2006	TIMELY				
						Previous repair	4,275	09/28/2006	TIMELY				
						Previous repair	10,500	09/29/2006	TIMELY				
						Previous repair	2,637	10/02/2006	TIMELY				
						Tighten packing	2,343	10/03/2006	TIMELY				
						Tighten packing	783	10/04/2006	TIMELY				
						Inject	1,617	10/05/2006	TIMELY				
						Previous repair	13,200	10/06/2006	TIMELY				
						Previous repair	1,320	10/07/2006	TIMELY				
0228NSPSLL00437	VALVE	5FT E OF PS-143 1ST LANDING	11/05/2008	1,140	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	11/20/2008	TIMELY	Yes	NA
0228NSPSLL00610	VALVE	CTV FV-109 4FT NE OF PUMP G-5	08/10/2006	926	08/24/2006	Steam seal	573	08/10/2006	TIMELY	08/25/2006	TIMELY	Yes	NA
						Tighten packing	640	08/11/2006	TIMELY				
						Previous repair	1,091	08/14/2006	TIMELY				
						Previous repair	938	08/15/2006	TIMELY				
						Previous repair	1,501	08/16/2006	TIMELY				
						Previous repair	1,880	08/17/2006	TIMELY				
						Previous repair	2,897	08/18/2006	TIMELY				
						Previous repair	876	08/21/2006	TIMELY				
						Previous repair	2,091	08/22/2006	TIMELY				
						Tighten packing	10,200	08/23/2006	TIMELY				
						Tighten packing	2,428	08/24/2006	TIMELY				
						Tighten packing	1,252	08/25/2006	TIMELY				
0228NSPSLL00639	VALVE	20 FT NW OF PUMP G-2	08/07/2007	584	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	08/22/2007	TIMELY	Yes	NA
0228NSPSLL00657	VALVE	MOV 31G-240 W SIDE OF F-406 SUCTION LINE	02/15/2007	10,200	02/15/2007	Tighten packing	17,300	02/15/2007	TIMELY	03/02/2007	TIMELY	Yes	NA
						Apply sealant	1,030	02/22/2007	TIMELY				
						Previous repair	14,600	02/27/2007	TIMELY				
						Previous repair	100,000	02/28/2007	TIMELY				
						Tighten packing	11,200	03/05/2007	TIMELY				

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						Repair Method	Monitoring results	Date of repair	If injection or equivalent, timely? (i.e., injection or equivalent within 30 days)				
0228NSPSLL00700	VALVE	N SIDE OF G-66 CHK	09/22/2006	816,300	09/22/2006	Tighten plug	31,000	09/22/2006	TIMELY	10/07/2006	TIMELY	Yes	NA
						Sealant	2,441	09/26/2006	TIMELY				
						Sealant	28,400	09/27/2006	TIMELY				
						Sealant	9,852	09/28/2006	TIMELY				
						Previous repair	1,090	09/29/2006	TIMELY				
						Previous repair	815	10/02/2006	TIMELY				
						Tightened packing and applied sealant	6,381	10/03/2006	TIMELY				
						Previous repair	1,026	10/04/2006	TIMELY				
						Previous repair	728	10/05/2006	TIMELY				
						Previous repair	850	10/06/2006	TIMELY				
						Tightened plug and applied sealant	2,914	10/07/2006	TIMELY				
						Sealant	584	10/09/2006	TIMELY				
						Tighten packing	57,510,000	02/15/2008	TIMELY	02/29/2008	TIMELY	Yes	NA
						Previous repair	7,886	02/27/2008	TIMELY				
0228NSPSLL00754	VALVE	MOV-265 N SIDE OF G-56	02/15/2008	4,598	02/15/2008	Tighten packing	548	02/27/2008	TIMELY				
						Previous repair	613	02/28/2008	TIMELY				
						Previous repair	504	02/29/2008	TIMELY				
						Tighten	998	08/10/2006	TIMELY	09/09/2006	TIMELY	Yes	NA
						Previous repair	727	08/11/2006	TIMELY				
						Previous repair	730	08/14/2006	TIMELY				
						Previous repair	2,697	08/15/2006	TIMELY				
						Previous repair	2,061	08/16/2006	TIMELY				
						Previous repair	5,112	08/17/2006	TIMELY				
						Previous repair	4,640	08/18/2006	TIMELY				
						Previous repair	678	08/21/2006	TIMELY				
						Previous repair	16,900	08/22/2006	TIMELY				
						Previous repair	3,877	08/23/2006	TIMELY				
						Sealant	7,287	08/24/2006	TIMELY				
						Tighten packing	3,765	08/25/2006	TIMELY				
						Tighten	2,134	09/22/2006	TIMELY				
0228NSPSLL00928	VALVE	NW OF PUMP G-2 ON LAND AT PS-132 N RAIL	11/06/2006	787	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	09/01/2006	TIMELY	Yes	NA
0331HONLL00217	VALVE	SW OF TANK 501 AT CORNER OF ROAD SLOP HEADER	07/28/2006	1,011	08/04/2006	Tighten	2,351	07/28/2006	TIMELY	08/11/2006	TIMELY	Yes	NA
						Previous repair	956	08/01/2006	TIMELY				
						Previous repair	1,924	08/02/2006	TIMELY				
						Previous repair	33,200	08/04/2006	TIMELY				
						Inject	796	08/07/2006	TIMELY				
						Previous repair	7,555	08/08/2006	TIMELY				
						Previous repair	3,001	08/09/2006	TIMELY				
						Previous repair	3,565	08/10/2006	TIMELY				
						Previous repair	1,808	08/11/2006	TIMELY				

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						Repair Method	Monitoring results	Date of repair	If injection or equivalent, timely? (i.e., injection or equivalent within 30 days)				
0331HONLL00633	VALVE	MOV-1907-2 E OF SOLVENT RACK PUMP 18G-104	01/14/2008	585	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	01/29/2008	TIMELY	Yes	NA
0331HONLL00690	VALVE	S OF PUMP 18G-115 IN PIPE RACK	08/23/2006	10,100	08/23/2006	Tighten packing	11,000	08/23/2006	TIMELY	09/07/2006	TIMELY	Yes	NA
						Tighten packing	3,389	09/06/2006	TIMELY				
						Inject	4,400	09/07/2006	TIMELY				
0331HONLL00708	VALVE	S SIDE OF 18G-111 SW OF TANK 617 ON PAD	07/27/2006	1,584	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	08/11/2006	TIMELY	Yes	NA
0331HONLL01025	VALVE	IN GPR ACROSS ROAD W OF TANK 601 E OF SOLVENT RACK	07/27/2006	3,387	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	08/11/2006	TIMELY	Yes	NA
0331HONLL01035	VALVE	IN GPR ACROSS ROAD W OF TANK 601 E OF SOLVENT RACK	07/27/2006	1,210	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	08/11/2006	TIMELY	Yes	NA
0331NSPSGV00062	VALVE	TOP OF BUTANE SPHERE 66 E SIDE OVER RAIL	07/19/2006	12,200	07/19/2006	Tighten	76,100	07/19/2006	TIMELY	08/03/2006	TIMELY	Yes	NA
						Previous repair	90,000	07/21/2006	TIMELY				
						Previous repair	100,000	07/24/2006	TIMELY				
						Inject	762	07/25/2006	TIMELY				
						Re-inject	5,375	07/26/2006	TIMELY				
						Previous repair	902	07/27/2006	TIMELY				
						Previous repair	824	08/01/2006	TIMELY				
						Re-inject	678	08/01/2006	TIMELY				
						Previous repair	525	08/02/2006	TIMELY				
0331NSPSGV00096	VALVE	TOP PART OF PIPE ROW NE OF PROPANE BULLETS	07/11/2007	2,402	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	07/26/2007	TIMELY	Yes	NA
0331NSPSGV00113	VALVE	N PMP 31G-10	10/06/2006	6,848	10/06/2006	Tighten	15,500	10/06/2006	TIMELY	10/21/2006	TIMELY	Yes	NA
						Tightened packing and applied sealant	1,516	10/10/2006	TIMELY				
						Tighten packing	719	10/16/2006	TIMELY				
						Inject	680	10/17/2006	TIMELY				
						Re-inject	1,924	10/19/2006	TIMELY				
						Previous repair	2,572	10/20/2006	TIMELY				
0331NSPSGV00145	RELIEF	(BUTANE SPHERES) PRV TOP OF BUTANE SPHERE 67	01/20/2009	81,400	01/20/2009	Not a Valve	Not a Valve	Not a Valve	Not a Valve	02/04/2009	TIMELY	Yes	NA
0331NSPSLL00018	VALVE	IN PIPEROW SW OF TANK 404 N OF TANK 417 MOV 345	10/24/2007	537	10/26/2007	Tighten packing	1163	10/24/2007	TIMELY	11/30/2007	LATE	Yes	NA
						Tighten packing	871	10/26/2007	TIMELY				
						Tighten packing	18,100	10/26/2007	TIMELY				
						Previous repair	1,156	10/29/2007	TIMELY				
						Previous repair	884	11/14/2007	TIMELY				
						Previous repair	695	11/20/2007	TIMELY				
						Previous repair	1,253	11/21/2007	TIMELY				
						Previous repair	3,956	11/26/2007	TIMELY				
						Previous repair	798	11/29/2007	TIMELY				



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						Repair Method	Monitoring results	Date of repair	If injection or equivalent, timely? (i.e., injection or equivalent within 30 days)				
0331NSPSLL00138	VALVE	VLV STATION S OF TK 411 IN PIPEWAY N OF LAND1NG	10/10/2006	2,102	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	10/25/2006	TIMELY	Yes	NA
0331NSPSLL00172	VALVE	TANK 484 S SIDE	10/17/2008	1,191	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	10/31/2008	TIMELY	Yes	NA
0331NSPSLL00327	VALVE	SW SIDE OF TANK 403 DRAIN	10/17/2008	1,103	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	10/31/2008	TIMELY	Yes	NA
0331NSPSLL00349	VALVE	NW SIDE TANK 407	10/19/2006	715	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	11/06/2006	TIMELY	Yes	NA
0331NSPSLL00364	VALVE	TANK 405 SW SIDE MOV-1231	04/24/2007	623	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	05/11/2007	TIMELY	Yes	NA
0331NSPSLL00790	VALVE	TANK 206 W SIDE	10/23/2006	555	11/02/2006	Tighten bonnet	581	10/23/2006	TIMELY	11/07/2006	TIMELY	Yes	NA
						Previous repair	696	10/25/2006	TIMELY				
						Previous repair	618	10/26/2006	TIMELY				
						Previous repair	608	10/27/2006	TIMELY				
						Previous repair	578	10/30/2006	TIMELY				
						Tighten bonnet	629	10/31/2006	TIMELY				
						Apply sealant	3,634	11/01/2006	TIMELY				
						Apply sealant	37,700	11/02/2006	TIMELY				
						Previous repair	8,167	11/03/2006	TIMELY				
						Previous repair	9,762	11/06/2006	TIMELY				
						Previous repair	43,600	11/07/2006	TIMELY				
						Previous repair	17,900	11/08/2006	TIMELY				
0331NSPSLL00806	VALVE	W SIDE OF TANK 312 DRAIN	04/16/2009	501	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	05/01/2009	TIMELY	Yes	NA
0331NSPSLL00870	RELIEF	PRV 31SV-488 TANK 302 N SIDE	01/18/2007	5,281	01/18/2007	Not a Valve	Not a Valve	Not a Valve	Not a Valve	02/02/2007	TIMELY	Yes	NA
0331NSPSLL00876	VALVE	ON N SIDE OF TK-208	08/25/2006	10,000	08/25/2006	Tighten	11,500	08/25/2006	TIMELY	09/09/2006	TIMELY	Yes	NA
						Previous repair	3,859	09/09/2006	TIMELY				
0331NSPSLL00892	VALVE	SE END OF PLATFORM N OF BUTANE SPHERE 68	01/09/2008	5,619	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	01/24/2008	TIMELY	Yes	NA
0331NSPSLL00953	VALVE	TANK 481 S SIDE	07/25/2006	16,900	07/25/2006	Tighten flange	923,400	07/25/2006	TIMELY	08/09/2006	TIMELY	Yes	NA
						Previous repair	14,400	07/26/2006	TIMELY				
						Previous repair	14,800	07/27/2006	TIMELY				
						Previous repair	4,174	08/01/2006	TIMELY				
						Previous repair	7,223	08/02/2006	TIMELY				
						Tighten packing	146,800	08/03/2006	TIMELY				
						Previous repair	107,900	08/04/2006	TIMELY				
						Previous repair	5,206	08/07/2006	TIMELY				
						Previous repair	36,600	08/08/2006	TIMELY				
						Previous repair	21,100	08/09/2006	TIMELY				
0331NSPSLL00983	VALVE	PUMP PAD SW OF TANK 429 PUMP 35G-3	09/20/2006	2,291	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	10/05/2006	TIMELY	Yes	NA
0331NSPSLL01001	VALVE	N SIDE OF TANK 402	10/09/2006	525	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	10/24/2006	TIMELY	Yes	NA

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						Repair Method	Monitoring results	Date of repair	If injection or equivalent, timely? (i.e., injection or equivalent within 30 days)				
0331NSPSLL01003	VALVE	E SIDE OF PUMP 128G-21A NE OF PROPANE BULLETS LPB	10/05/2006	4,010	10/20/2006	Tighten	4,579	10/05/2006	TIMELY	10/20/2006	TIMELY	Yes	NA
						Previous repair	3,303	10/09/2006	TIMELY				
						Sealant	7,309	10/10/2006	TIMELY				
						Previous repair	534	10/13/2006	TIMELY				
						Previous repair	1,154	10/17/2006	TIMELY				
						Previous repair	17,900	10/20/2006	TIMELY				
						Previous repair	28,700	10/23/2006					
						Ball valve -- can not inject							
0331NSPSLL01008	RELIEF	PRV 128SV-944 W SIDE OF PUMP 128G-21A NE OF PROPANE BULLETS	08/25/2006	13,800	08/25/2006	Not a Valve	Not a Valve	Not a Valve	Not a Valve	09/09/2006	TIMELY	Yes	NA
0331NSPSLL01012	VALVE	NE OF PUMP 128G-21A NE OF PROPANE BULLETS	10/05/2006	9,285	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	10/20/2006	TIMELY	Yes	NA
0331NSPSLL01021	VALVE	W OF PUMP 128G-21B NE OF PROPANE BULLETS	10/05/2006	724	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	10/20/2006	TIMELY	Yes	NA
0331NSPSLL01032	VALVE	W OF PUMP 128G-21B GPR NE OF PROPANE BULLETS	09/21/2006	2,577	10/02/2006	Steam seal	2,753	09/21/2006	TIMELY	10/06/2006	TIMELY	Yes	NA
						Previous repair	4,706	09/25/2006	TIMELY				
						Previous repair	4,840	09/27/2006	TIMELY				
						Previous repair	2,067	09/28/2006	TIMELY				
						Previous repair	868	09/29/2006	TIMELY				
						Previous repair	14,100	10/02/2006	TIMELY				
						Sealant	19,700	10/03/2006	TIMELY				
						Previous repair	11,200	10/04/2006	TIMELY				
						Previous repair	1,259	10/05/2006	TIMELY				
						Previous repair	10,900	10/06/2006	TIMELY				
						Ball valve can not inject							
0331NSPSLL01053	VALVE	BUTANE SPHERES E SIDE OF SPHERE 67	10/03/2006	1,585	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	10/18/2006	TIMELY	Yes	NA
0331NSPSLL01058	VALVE	NW OF PUMP 128G-21B NE OF PROPANE BULLETS	07/24/2006	1,775	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	08/08/2006	TIMELY	Yes	NA
0331NSPSLL01087	VALVE	E SIDE PMP 31G-10 PIPE ROW	07/25/2006	13,500	07/25/2006	Tighten flange (valve injected twice previously)	11,900	07/25/2006	TIMELY	08/09/2006	TIMELY	Yes	NA
						Tighten flange	2,059	07/25/2006	TIMELY				
						Previous repair	72,700	07/27/2006	TIMELY				
						Previous repair	90,700	08/01/2006	TIMELY				
						Previous repair	6,281	08/02/2006	TIMELY				
						Tighten flange	5,359	08/04/2006	TIMELY				
						Tighten packing	9,409	08/07/2006	TIMELY				
						Previous repair	6,093	08/08/2006	TIMELY				
						Previous repair	10,100	08/09/2006	TIMELY				

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This is a list of those items currently on the Delay of Repair list (as of end of reporting period), placed there since February 28, 2006.

Component Number	Type	Description	Initial Inspection Date	Concentration (ppmv)	Date leaking > 10,000 ppmv	For valves leaking > 10,000 ppmv				Date placed on Delay of Repair	Placed on Delay of Repair by Unit Supervisor w/in 30 days?	Is LDAR monitoring continuing while on Delay of Repair	For pumps, were best efforts used to isolate and repair?
						Repair Method	Monitoring results	Date of repair	If injection or equivalent, timely? (i.e., injection or equivalent within 30 days)				
0331NSPSLL01093	VALVE	IN PIPE ROW NE PMP 31G-5	10/05/2006	3,536	10/20/2006	Tighten flange	7,201	10/05/2006	TIMELY	10/20/2006	TIMELY	Yes	NA
						Tighten packing	964	10/12/2006	TIMELY				
						Tighten flange	1,422	10/17/2006	TIMELY				
						Previous repair	67,100	10/20/2006	TIMELY				
						Previous repair	3,476	10/23/2006	TIMELY				
0331NSPSLL01096	VALVE	NE OF PUMP G-5 IN PIPE ROW E OF PROPANE BULLETS	07/31/2006	2,088	08/08/2006	Tighten flange	2,935	07/31/2006	TIMELY	08/15/2006	TIMELY	Yes	NA
						Previous repair	2,090	08/01/2006	TIMELY				
						Previous repair	7,190	08/02/2006	TIMELY				
						Previous repair	5,784	08/04/2006	TIMELY				
						Tighten packing	9,400	08/07/2006	TIMELY				
						Previous repair	41,100	08/08/2006	TIMELY				
						Previous repair	6,285	08/09/2006	TIMELY				
						Previous repair	16,000	08/10/2006	TIMELY				
						Previous repair	3,347	08/11/2006	TIMELY				
						Previous repair	34,700	08/14/2006	TIMELY				
						Previous repair	3,544	08/15/2006	TIMELY				
						Sealant	13,700	08/16/2006	TIMELY				
						Previous repair	109,900	08/17/2006	TIMELY				
						Leak source was the valve flange							
0331NSPSLL01126	VALVE	CTV PCV-319. BUTANE SPHERES SE OF SPHERE 66	10/22/2007	7,790	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	11/13/2007	TIMELY	Yes	NA
0331NSPSLL01136	RELIEF	PRV 131SV-2902 CTL NE OF BUTANE SPHERE 65	06/29/2006	97,100	06/29/2006	Not a Valve	Not a Valve	Not a Valve	Not a Valve	07/14/2006	TIMELY	Yes	NA
0331NSPSLL01149	VALVE	BUTANE SPHERES E SIDE OF SPHERE 67	07/26/2007	1,575	07/26/2007	Tighten packing	10,300	07/26/2007	TIMELY	08/10/2007	TIMELY	Yes	NA
						Previous repair	893	08/07/2007	TIMELY				
						Previous repair	527	08/10/2007	TIMELY				
0331NSPSLL01192	VALVE	BUTANE SPHERES ON PLATFORM NW OF SPHERE 68	10/04/2006	1,093	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	10/06/2006	TIMELY	Yes	NA
0331NSPSLL01203	VALVE	N OF TANK 437	08/26/2006	4,329	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	09/09/2006	TIMELY	Yes	NA
0331NSPSLL01235	VALVE	N SIDE OF TANK 402	07/24/2006	2,365	07/27/2006	Tighten	1,422	07/24/2006	TIMELY	08/08/2006	TIMELY	Yes	NA
						Previous repair	10,400	07/27/2006	TIMELY				
						Previous repair	2,393	08/01/2006	TIMELY				
						Previous repair	9,085	08/02/2006	TIMELY				
						Inject	845	08/02/2006	TIMELY				
						Inject	2,046	08/03/2006	TIMELY				
						Previous repair	8,954	08/04/2006	TIMELY				
						Inject	4,169	08/05/2006	TIMELY				
						Previous repair	4,208	08/07/2006	TIMELY				
						Previous repair	1,479	08/08/2006	TIMELY				
						Previous repair	15,900	08/09/2006	TIMELY				

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Component Number	Type	Description	Initial Inspection Date	Concentration (ppmv)	Date leaking > 10,000 ppmv	For valves leaking > 10,000 ppmv				Date placed on Delay of Repair	Placed on Delay of Repair by Unit Supervisor w/in 30 days?	Is LDAR monitoring continuing while on Delay of Repair	For pumps, were best efforts used to isolate and repair?
						Repair Method	Monitoring results	Date of repair	If injection or equivalent, timely? (i.e., injection or equivalent within 30 days)				
0331NSPSLL01374	VALVE	W OF PUMP 128G-21B NE OF PROPANE BULLETS	10/05/2006	1,078	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	10/20/2006	TIMELY	Yes	NA
0331NSPSLL01456	VALVE	NW OF PUMP 128G-21B NE OF PROPANE BULLETS	09/21/2006	1,334	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	10/06/2006	TIMELY	Yes	NA
0331NSPSLL01460	VALVE	NW OF PUMP 128G-21B NE OF PROPANE BULLETS	11/20/2006	2,702	12/01/2006	Tighten	1,178	11/20/2006	TIMELY	12/05/2006	TIMELY	Yes	NA
						Previous repair	1,054	11/22/2006	TIMELY				
						Tighten packing	958	11/27/2006	TIMELY				
						Previous repair	647	11/29/2006	TIMELY				
						Tighten packing	2,932	11/30/2006	TIMELY				
						Previous repair	11,000	12/01/2006	TIMELY				
						Re-inject	621	12/04/2006	TIMELY				
						Previous repair	1,714	12/05/2006	TIMELY				
						Re-inject	2,095	12/06/2006	TIMELY				
0331NSPSLL01461	VALVE	NW OF PUMP 128G-21B NE OF PROPANE BULLETS	11/20/2006	865	12/01/2006	Tighten	718	11/20/2006	TIMELY	12/05/2006	TIMELY	Yes	NA
						Previous repair	637	11/22/2006	TIMELY				
						Tighten packing	908	11/27/2006	TIMELY				
						Previous repair	718	11/30/2006	TIMELY				
						Tighten packing	26,100	12/01/2006	TIMELY				
						Previous repair	3,399	12/02/2006	TIMELY				
						Inject	570	12/04/2006	TIMELY				
						Previous repair	659	12/05/2006	TIMELY				
						Re-inject	638	12/06/2006	TIMELY				
0331NSPSLL01519	VALVE	AT PUMP 31G-7 SW OF TK-421	11/20/2006	688	11/20/2006	Tighten	10,300	11/20/2006	TIMELY	12/05/2006	TIMELY	Yes	NA
						Previous repair	771	11/22/2006	TIMELY				
						Previous repair	2,485	11/29/2006	TIMELY				
						Tighten packing	1,165	11/30/2006	TIMELY				
						Previous repair	1,291	12/01/2006	TIMELY				
						Previous repair	659	12/04/2006	TIMELY				
						Previous repair	959	12/05/2006	TIMELY				
						Inject	722	12/06/2006	TIMELY				
						Valve is a Motor Operated Valve, and injection of this valve would have rendered it mechanically inoperable.							
0331NSPSLL01535	VALVE	UNDER NW END OF PLAT S SIDE OF LADDER MOV-1274 SPHERES	12/08/2009	3,463	12/08/2009	Steamed	19,100	12/08/2010	TIMELY	12/23/2009	TIMELY	Yes	NA
						Applied sealant	1,895	12/10/2010	TIMELY				
						Previous repair	10,400	12/22/2010	TIMELY				
						Previous repair	100,000	12/23/2010	TIMELY				
0331NSPSLL01540	VALVE	UNDER NW END OF PLAT E SIDE OF LADDER MOV-1273 SPHERES	04/09/2007	651	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	04/13/2007	TIMELY	Yes	NA
0331NSPSLL01547	RELIEF	PRV 131SV-975 W OF BUTANE SPHERE 68 IN AND UNDER PR	06/29/2006	7,121	06/29/2006	Not a Valve	Not a Valve	Not a Valve	Not a Valve	07/14/2006	TIMELY	Yes	NA

**ATTACHMENT 9, Appendix C**
**Delay of Repair Information**
**[130(b)(vii)]**

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Component Number	Type	Description	Initial Inspection Date	Concentration (ppmv)	Date leaking > 10,000 ppmv	For valves leaking > 10,000 ppmv				Date placed on Delay of Repair	Placed on Delay of Repair by Unit Supervisor w/in 30 days?	Is LDAR monitoring continuing while on Delay of Repair	For pumps, were best efforts used to isolate and repair?
						Repair Method	Monitoring results	Date of repair	if injection or equivalent, timely? (i.e., injection or equivalent within 30 days)				
0331NSPSLL01549	VALVE	W OF BUTANE SPHERE 68 IN AND UNDER PR	04/08/2008	693	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	04/24/2008	TIMELY	Yes	NA
0331NSPSLL01770	RELIEF	PRV SV-1959 SW OFF TANK 609 ON S SIDE PMP	01/17/2007	20,500	01/17/2007	Not a Valve	Not a Valve	Not a Valve	Not a Valve	02/01/2007	TIMELY	Yes	NA
0331NSPSLL01813	VALVE	S OF PUMP 31G-11B	10/22/2007	1,092	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	11/13/2007	TIMELY	Yes	NA
0331NSPSLL01821	VALVE	N OF PUMP 31G-11A	07/18/2006	979,999	07/18/2006	Steam seal	45,598	07/18/2006	TIMELY	08/02/2006	TIMELY	Yes	NA
						Previous repair	16,500	07/19/2006	TIMELY				
						Previous repair	2,856	07/21/2006	TIMELY				
						Previous repair	2,521	07/24/2006	TIMELY				
						Previous repair	745	07/25/2006	TIMELY				
						Previous repair	29,700	07/27/2006	TIMELY				
						Previous repair	8,302	08/01/2006	TIMELY				
						Rplc bonnet bolts	94,000	08/01/2006	TIMELY				
						Previous repair	2,093	08/02/2006	TIMELY				
0331NSPSLL01856	VALVE	WLODARSKI JUNCTION W TO E	09/22/2006	627	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	10/07/2006	TIMELY	Yes	NA
0331NSPSLL01874	VALVE	N OF PUMP 31G-12	09/21/2006	13,600	09/21/2006	Tighten	8,953	09/21/2006	TIMELY	10/06/2006	TIMELY	Yes	NA
						Previous repair	16,500	09/25/2006	TIMELY				
						Previous repair	6,929	09/27/2006	TIMELY				
						Previous repair	6,069	09/28/2006	TIMELY				
						Previous repair	7,424	09/29/2006	TIMELY				
						Previous repair	5,864	10/02/2006	TIMELY				
						Tightened packing and applied sealant	8,149	10/03/2006	TIMELY				
						Previous repair	45,720	10/04/2006	TIMELY				
						Inject	1,267	10/05/2006	TIMELY				
0331NSPSLL01901	VALVE	PLATFORM N OF BUTANE SPHERE 68	07/18/2006	1,956	NA	Inject	1,219	10/06/2006	TIMELY				
						Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	08/02/2006	TIMELY	Yes	NA
0331NSPSLL01908	VALVE	ON PLATFORM N OF BUTANE SPHERE 68	07/25/2008	1,505	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	08/09/2008	TIMELY	Yes	NA
0331NSPSLL01911	VALVE	331MOV-1265 NE END OF PLATFORM AT N SIDE OF BUTANE SPHERES	06/26/2007	6,357	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	07/24/2007	TIMELY	Yes	NA
0331NSPSLL01924	RELIEF	PRV 31SV-4016 E OF & OFF PLATFORM NORTH OF SPHERES	10/23/2007	4,453	NA	Not a Valve	Not a Valve	Not a Valve	Not a Valve	12/06/2007	LATE	Yes	NA
0331NSPSLL01938	VALVE	E OF PLATFORM N OF BUTANE SPHERE 68	04/08/2008	2,185	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	04/24/2008	TIMELY	Yes	NA
0331NSPSLL02111	VALVE	E OF TANK 432 PMP 31G-9A	04/15/2009	565	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	04/30/2009	TIMELY	Yes	NA
0331NSPSLL02118	VALVE	W OF TANK 432 AT CTL	10/06/2008	173,600	10/06/2008	Tighten packing	93300	10/06/2008	TIMELY	10/21/2008	TIMELY	Yes	NA
						Tighten packing	10600	10/08/2008	TIMELY				
						Tighten packing	1292	10/10/2008	TIMELY				
						Wire brush & clean	28600	10/14/2008	TIMELY				
						Apply sealant	789	10/16/2008	TIMELY				
0331NSPSLL02132	VALVE	W OF TANK 432 PUMP 31G-9B	10/02/2006	1,387	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	10/17/2006	TIMELY	Yes	NA

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						Repair Method	Monitoring results	Date of repair	If injection or equivalent, timely? (i.e., injection or equivalent within 30 days)				
0331NSPSLL02137	VALVE	W OF TANK 432 PUMP 31G-9B	04/15/2009	2,119	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	04/30/2009	TIMELY	Yes	NA
0331NSPSLL02221	VALVE	PUMP 31G-19B	10/20/2008	63,700	10/20/2008	Steam seal	27100	10/20/2008	TIMELY	11/05/2008	TIMELY	Yes	NA
						Tighten packing	923	10/21/2008	TIMELY				
						Tighten packing	2000	10/23/2008	TIMELY				
						Apply sealant	7653	10/27/2008	TIMELY				
						Previous repair	1164	11/04/2008	TIMELY				
0331NSPSLL02462	VALVE	SE OF TK-480 AT CTL BY ROAD W OF PUMP 31G-409	10/05/2006	682	10/20/2006	Tighten	611	10/05/2006	TIMELY	10/20/2006	TIMELY	Yes	NA
						Re-inject	558	10/16/2006	TIMELY				
						Re-inject	1,044	10/17/2006	TIMELY				
						Re-inject	3,115	10/19/2006	TIMELY				
						Previous repair	20,300	10/20/2006	TIMELY				
0331NSPSLL02473	VALVE	CTL BY ROAD W OF PMP 31G 409	10/05/2006	1,666	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	10/20/2006	TIMELY	Yes	NA
0331NSPSLL02627	VALVE	S OF TANK 484 IN PIPE ROW CHK	07/26/2006	2,128	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	08/11/2006	TIMELY	Yes	NA
0331NSPSLL02632	VALVE	AT W SIDE OF TK-480	09/21/2006	830	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	10/06/2006	TIMELY	Yes	NA
0331NSPSLL02635	VALVE	AT S SIDE OF TK-480	09/21/2006	2,250	10/06/2006	Tighten	2,302	09/21/2006	TIMELY	10/06/2006	TIMELY	Yes	NA
						Previous repair	760	09/25/2006	TIMELY				
						Previous repair	2,274	09/27/2006	TIMELY				
						Previous repair	2,180	09/28/2006	TIMELY				
						Previous repair	2,375	09/29/2006	TIMELY				
						Previous repair	1,409	10/02/2006	TIMELY				
						Tightened packing and applied sealant	1,091	10/03/2006	TIMELY				
						Previous repair	892	10/04/2006	TIMELY				
						Previous repair	864	10/05/2006	TIMELY				
						Previous repair	11,600	10/06/2006	TIMELY				
						Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	09/09/2006	TIMELY	Yes	NA
0331NSPSLL02737	VALVE	SW SIDE OF TANK 406	08/29/2006	5,619	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	09/09/2006	TIMELY	Yes	NA
0331NSPSLL02908	VALVE	UNDER SPHERE TK-488	08/25/2006	1,460	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	09/09/2006	TIMELY	Yes	NA
0331NSPSLL02910	VALVE	BOTTOM OF SPHERE TK-488	11/20/2006	1,076	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	12/05/2006	TIMELY	Yes	NA
0331NSPSLL02912	VALVE	UNDER SPHERE TK-488	08/25/2006	12,400	08/25/2006	Tighten flange	10,200	08/25/2006	TIMELY	09/09/2006	TIMELY	Yes	NA
						Tighten flange	60,700	09/09/2006	TIMELY				
17812 (formerly 0331NSPSLL00702)	VALVE	AT E SIDE OF TK-439	10/04/2006	1,421	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	10/19/2006	TIMELY	Yes	NA
0334NSPSLL00014	VALVE	S SIDE OF 34F-3	12/31/2006	5,620	01/04/2007	Tighten packing	3,698	12/31/2006	TIMELY	01/05/2007	TIMELY	Yes	NA
						Apply sealant	10,800	01/04/2007	TIMELY				
						Injected twice previously on 10/10/2006							
0334NSPSLL00029	VALVE	E OF 34F-3 SE OF 34F-4	02/22/2008	3,136	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	03/07/2008	TIMELY	Yes	NA
0334NSPSLL00040	VALVE	NE OF 24F-3 SE OF 34F-4	05/22/2007	21,900	05/22/2007	Tighten plug	34,600	05/22/2007	TIMELY	06/05/2007	TIMELY	Yes	NA
						Replace plug	1,672	05/30/2007	TIMELY				
						Tighten plug	4,882	06/01/2007	TIMELY				
						Replace plug	2,735	06/05/2007	TIMELY				
						Previous repair	10,600	06/06/2007	TIMELY				
						Leak source is plug -- not injectable							

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						Repair Method	Monitoring results	Date of repair	If injection or equivalent, timely? (i.e., injection or equivalent within 30 days)				
0334NSPSLL00041	VALVE	CTV LCV-803 E SIDE OF 34F-4 S OF PUMP 34G-3.	11/19/2009	38,100	11/19/2009	Steamed	770	11/19/2009	TIMELY	12/04/2009	TIMELY	Yes	NA
						Tightened packing	7,276	11/25/2009	TIMELY				
0334NSPSLL00140	VALVE	LOADING PLAT N OF N LOADING ROOM	05/21/2007	703	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	06/05/2007	TIMELY	Yes	NA
0334NSPSLL00150	VALVE	LOADING PLAT N OF N LOADING ROOM	05/21/2007	539	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	06/05/2007	TIMELY	Yes	NA
0334NSPSLL00376	VALVE	UNDER LOADING PLAT OH S OF S LOADING ROOM	08/28/2006	841	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	09/11/2006	TIMELY	Yes	NA
0338NSPSLL00086	VALVE	CTV FV-234 ISL 3/4 E END ON PLTFRM N OVER RAIL	10/03/2006	1,235	NA	Not > 10,000	Not > 10,000	Not > 10,000	Not > 10,000	10/18/2006	TIMELY	Yes	NA
0844NPSOLL00132	PUMP	PUMP 52G-11B SW OF TK-402A	08/28/2007	76,700	08/28/2007	Not a Valve	Not a Valve	Not a Valve	Not a Valve	09/12/2007	TIMELY	Yes	Yes
0844NPSOLL00134	PUMP	PUMP 52G-11C SW OF TK402A	08/28/2007	56,500	08/28/2007	Not a Valve	Not a Valve	Not a Valve	Not a Valve	09/12/2007	TIMELY	Yes	Yes



**ATTACHMENT 9, Appendix D**  
**Initial Repair Attempt Details**  
**[130(b)(viii)]**

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Period Totals  
Effective 68  
Ineffective 94  
Worsen 11  


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Total 173

**Category Code**

- Effective: <= 200
- Ineffective: Remains between 200 and 499
- Worsen: > 499

Avg conc.change -3 ppmv decrease  
Avg emis. rate chnge -0.000033 lb/hr/attempt decrease  
Net emis. rate chnge -0.00571 lb/hr decrease

No.	Tag Number	Initial Reading		Initial Repair Attempt	Post Attempt Reading		Repair Date Gap	Remonitor Date Gap	Repair Timeliness (OK if ≤ 5)	Remonitor Timeliness (OK if ≤ 5)	Post - Initial Reading	Category
		Date	PPM	Date	Date	PPM						
1	15322	1/4/2010	254	1/4/2010	1/4/2010	91	0	0	OK	OK	-163	Effective
2	0122HONGV00556	1/8/2010	247	1/8/2010	1/8/2010	195	0	0	OK	OK	-52	Effective
3	0122HONGV01396	1/19/2010	350	1/19/2010	1/19/2010	1	0	0	OK	OK	-349	Effective
4	0122HONLL02323	1/7/2010	376	1/7/2010	1/7/2010	56	0	0	OK	OK	-320	Effective
5	0122HONLL02485	1/12/2010	201	1/12/2010	1/12/2010	217	0	0	OK	OK	16	Ineffective
6	0122HONLL02906	1/13/2010	363	1/13/2010	1/13/2010	204	0	0	OK	OK	-159	Ineffective
7	0122HONLL03375	1/7/2010	463	1/7/2010	1/7/2010	392	0	0	OK	OK	-71	Ineffective
8	0122HONLL03381	1/7/2010	455	1/7/2010	1/7/2010	345	0	0	OK	OK	-110	Ineffective
9	0122HONLL03463	1/8/2010	324	1/8/2010	1/8/2010	385	0	0	OK	OK	61	Ineffective
10	0217NSPSLL00201	1/8/2010	319	1/8/2010	1/8/2010	42	0	0	OK	OK	-277	Effective
11	0217NSPSLL01107	1/9/2010	415	1/9/2010	1/9/2010	415	0	0	OK	OK	0	Ineffective
12	0331HONLL00391	1/5/2010	365	1/5/2010	1/5/2010	454	0	0	OK	OK	89	Ineffective
13	0331HONLL00623	1/6/2010	237	1/6/2010	1/6/2010	409	0	0	OK	OK	172	Ineffective
14	0331HONLL00624	1/6/2010	417	1/6/2010	1/6/2010	484	0	0	OK	OK	67	Ineffective
15	0331HONLL00789	1/14/2010	479	1/14/2010	1/14/2010	444	0	0	OK	OK	-35	Ineffective
16	0331NSPSLL00034	1/22/2010	403	1/22/2010	1/22/2010	499	0	0	OK	OK	96	Ineffective
17	0331NSPSLL00085	1/15/2010	382	1/15/2010	1/15/2010	723	0	0	OK	OK	341	Worsen
18	0331NSPSLL00247	1/15/2010	379	1/15/2010	1/15/2010	2272	0	0	OK	OK	1893	Worsen
19	0331NSPSLL01187	1/12/2010	440	1/12/2010	1/12/2010	631	0	0	OK	OK	191	Worsen
20	0331NSPSLL01536	1/12/2010	204	1/12/2010	1/12/2010	158	0	0	OK	OK	-46	Effective
21	0331NSPSLL01609	1/4/2010	233	1/4/2010	1/4/2010	444	0	0	OK	OK	211	Ineffective
22	0331NSPSLL01632	1/4/2010	252	1/4/2010	1/4/2010	257	0	0	OK	OK	5	Ineffective
23	0331NSPSLL01724	1/15/2010	312	1/15/2010	1/15/2010	389	0	0	OK	OK	77	Ineffective
24	0331NSPSLL01778	1/6/2010	386	1/6/2010	1/6/2010	385	0	0	OK	OK	-1	Ineffective
25	0331NSPSLL02101	1/11/2010	407	1/11/2010	1/11/2010	490	0	0	OK	OK	83	Ineffective
26	0331NSPSLL02104	1/11/2010	248	1/11/2010	1/11/2010	271	0	0	OK	OK	23	Ineffective
27	0331NSPSLL02149	1/13/2010	263	1/13/2010	1/13/2010	144	0	0	OK	OK	-119	Effective
28	0331NSPSLL02257	1/12/2010	484	1/12/2010	1/12/2010	451	0	0	OK	OK	-33	Ineffective
29	0331NSPSLL02321	1/12/2010	351	1/12/2010	1/12/2010	25	0	0	OK	OK	-326	Effective



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		Date	PPM	Date	Date	PPM	Date Gap	Date Gap	Timeliness (OK if ≤ 5)	Timeliness (OK if ≤ 5)	Initial Reading	
30	0331NSPSLL02326	1/12/2010	388	1/12/2010	1/12/2010	421	0	0	OK	OK	33	Ineffective
31	0331NSPSLL02403	1/12/2010	406	1/12/2010	1/12/2010	58	0	0	OK	OK	-348	Effective
32	0331NSPSLL02637	1/12/2010	232	1/12/2010	1/12/2010	482	0	0	OK	OK	250	Ineffective
33	0331NSPSLL02668	1/26/2010	214	1/26/2010	1/26/2010	166	0	0	OK	OK	-48	Effective
34	0338HONLL00244	1/8/2010	491	1/8/2010	1/8/2010	64	0	0	OK	OK	-427	Effective
35	0338NSPSLL00037	1/8/2010	476	1/8/2010	1/8/2010	337	0	0	OK	OK	-139	Ineffective
36	0338NSPSLL00104	1/7/2010	395	1/7/2010	1/7/2010	450	0	0	OK	OK	55	Ineffective
37	0338NSPSLL00116	1/7/2010	208	1/7/2010	1/7/2010	207	0	0	OK	OK	-1	Ineffective
38	0338NSPSLL00124	1/7/2010	247	1/7/2010	1/7/2010	81	0	0	OK	OK	-166	Effective
39	0111NSPSGV00902	2/8/2010	315	2/8/2010	2/8/2010	159	0	0	OK	OK	-156	Effective
40	0115NSPSGV00244	2/10/2010	470	2/10/2010	2/10/2010	22	0	0	OK	OK	-448	Effective
41	0118NSPSGV00239	2/9/2010	219	2/9/2010	2/9/2010	173	0	0	OK	OK	-46	Effective
42	0118NSPSLL00522	2/12/2010	420	2/12/2010	2/12/2010	379	0	0	OK	OK	-41	Ineffective
43	114125	2/15/2010	246	2/15/2010	2/15/2010	130	0	0	OK	OK	-116	Effective
44	0122HONLL02678	2/4/2010	355	2/4/2010	2/4/2010	307	0	0	OK	OK	-48	Ineffective
45	0122HONLL04187	2/5/2010	301	2/5/2010	2/5/2010	264	0	0	OK	OK	-37	Ineffective
46	0123CR1GV00455	2/15/2010	311	2/15/2010	2/15/2010	191	0	0	OK	OK	-120	Effective
47	0123CR1LL00821	2/12/2010	312	2/12/2010	2/12/2010	310	0	0	OK	OK	-2	Ineffective
48	0123CR1LL01277	2/22/2010	412	2/22/2010	2/22/2010	1765	0	0	OK	OK	1353	Worsen
49	0125NSPSGV00302	2/10/2010	212	2/10/2010	2/10/2010	48	0	0	OK	OK	-164	Effective
50	0331NSPSLL01575	2/1/2010	438	2/1/2010	2/1/2010	197	0	0	OK	OK	-241	Effective
51	0331NSPSLL01638	2/3/2010	347	2/3/2010	2/3/2010	19	0	0	OK	OK	-328	Effective
52	0334NSPSGV00010	2/18/2010	362	2/18/2010	2/18/2010	361	0	0	OK	OK	-1	Ineffective
53	0334NSPSGV00035	2/19/2010	394	2/19/2010	2/19/2010	7185	0	0	OK	OK	6791	Worsen
54	0335NSPSLL00087	2/16/2010	436	2/16/2010	2/16/2010	406	0	0	OK	OK	-30	Ineffective
55	16431	2/23/2010	486	2/23/2010	2/23/2010	412	0	0	OK	OK	-74	Ineffective
56	0102NSPSGV00382	3/5/2010	356	3/5/2010	3/5/2010	43	0	0	OK	OK	-313	Effective
57	0102NSPSGV00444	3/11/2010	405	3/11/2010	3/11/2010	215	0	0	OK	OK	-190	Ineffective
58	0102NSPSLL00311	3/3/2010	402	3/3/2010	3/3/2010	152	0	0	OK	OK	-250	Effective
59	0102NSPSLL00589	3/8/2010	305	3/8/2010	3/8/2010	273	0	0	OK	OK	-32	Ineffective
60	0102NSPSLL00851	3/1/2010	210	3/1/2010	3/1/2010	14	0	0	OK	OK	-196	Effective
61	0108NSPSGV00159	3/19/2010	340	3/19/2010	3/19/2010	366	0	0	OK	OK	26	Ineffective
62	0114NSPSGV00166	3/18/2010	395	3/18/2010	3/18/2010	221	0	0	OK	OK	-174	Ineffective
63	0114NSPSGV00173	3/25/2010	239	3/29/2010	3/29/2010	431	4	4	OK	OK	192	Ineffective
64	0114NSPSGV00232	3/19/2010	232	3/19/2010	3/19/2010	232	0	0	OK	OK	0	Ineffective



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65	0114NSPSGV00410	3/25/2010	222	3/25/2010	3/25/2010	128	0	0	OK	OK	-94	Effective
66	0114NSPSGV00617	3/23/2010	415	3/23/2010	3/23/2010	358	0	0	OK	OK	-57	Ineffective
67	0120NSPSLL00072	3/11/2010	392	3/11/2010	3/11/2010	216	0	0	OK	OK	-176	Ineffective
68	0120NSPSLL00249	3/1/2010	369	3/1/2010	3/1/2010	363	0	0	OK	OK	-6	Ineffective
69	0120NSPSLL00253	3/2/2010	232	3/2/2010	3/2/2010	232	0	0	OK	OK	0	Ineffective
70	0120NSPSLL01274	3/2/2010	376	3/2/2010	3/2/2010	376	0	0	OK	OK	0	Ineffective
71	15321	3/2/2010	357	3/2/2010	3/2/2010	374	0	0	OK	OK	17	Ineffective
72	17449	3/26/2010	268	3/30/2010	3/30/2010	207	4	4	OK	OK	-61	Ineffective
73	0123CR1GV00852	3/5/2010	359	3/5/2010	3/5/2010	114	0	0	OK	OK	-245	Effective
74	0123CR1LL00729	3/5/2010	228	3/5/2010	3/5/2010	228	0	0	OK	OK	0	Ineffective
75	0212NSPSGV00009	3/15/2010	387	3/15/2010	3/15/2010	415	0	0	OK	OK	28	Ineffective
76	0212NSPSGV00044	3/19/2010	383	3/19/2010	3/19/2010	227	0	0	OK	OK	-156	Ineffective
77	0212NSPSGV00045	3/4/2010	423	3/4/2010	3/4/2010	199	0	0	OK	OK	-224	Effective
78	0212NSPSGV00774	3/8/2010	221	3/8/2010	3/8/2010	221	0	0	OK	OK	0	Ineffective
79	0212NSPSLL00367	3/1/2010	346	3/1/2010	3/1/2010	354	0	0	OK	OK	8	Ineffective
80	0212NSPSLL01036	3/5/2010	372	3/5/2010	3/5/2010	794	0	0	OK	OK	422	Worsen
81	0118NSPSLL00004	4/13/2010	409	4/13/2010	4/13/2010	437	0	0	OK	OK	28	Ineffective
82	0122HONGV00530	4/7/2010	468	4/7/2010	4/7/2010	548	0	0	OK	OK	80	Worsen
83	0122HONGV00765	4/22/2010	470	4/22/2010	4/22/2010	410	0	0	OK	OK	-60	Ineffective
84	0122HONLL01498	4/15/2010	421	4/15/2010	4/15/2010	89	0	0	OK	OK	-332	Effective
85	0122HONLL01689	4/15/2010	455	4/15/2010	4/15/2010	426	0	0	OK	OK	-29	Ineffective
86	0122HONLL02582	4/20/2010	240	4/20/2010	4/20/2010	425	0	0	OK	OK	185	Ineffective
87	0122HONLL02678	4/6/2010	405	4/6/2010	4/6/2010	390	0	0	OK	OK	-15	Ineffective
88	0122HONLL03375	4/8/2010	446	4/8/2010	4/8/2010	369	0	0	OK	OK	-77	Ineffective
89	0122HONLL03381	4/8/2010	356	4/8/2010	4/8/2010	43	0	0	OK	OK	-313	Effective
90	0122HONLL03386	4/8/2010	387	4/8/2010	4/8/2010	186	0	0	OK	OK	-201	Effective
91	0122NSPSGV00119	4/14/2010	247	4/14/2010	4/14/2010	219	0	0	OK	OK	-28	Ineffective
92	0123CR1GV00451	4/7/2010	243	4/7/2010	4/7/2010	140	0	0	OK	OK	-103	Effective
93	15587	4/13/2010	372	4/13/2010	4/13/2010	419	0	0	OK	OK	47	Ineffective
94	0217NSPSLL00117	4/27/2010	432	4/27/2010	4/27/2010	1074	0	0	OK	OK	642	Worsen
95	0217NSPSLL00799	4/29/2010	226	4/29/2010	4/29/2010	226	0	0	OK	OK	0	Ineffective
96	0217NSPSLL01107	4/28/2010	459	4/28/2010	4/28/2010	101	0	0	OK	OK	-358	Effective
97	0331HONLL00034	4/1/2010	239	4/1/2010	4/1/2010	144	0	0	OK	OK	-95	Effective
98	0331HONLL00131	4/1/2010	247	4/1/2010	4/1/2010	154	0	0	OK	OK	-93	Effective
99	0331HONLL00624	4/6/2010	326	4/6/2010	4/6/2010	34	0	0	OK	OK	-292	Effective



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100	0331HONLL00678	4/8/2010	243	4/8/2010	4/8/2010	154	0	0	OK	OK	-89	Effective
101	0331HONLL00839	4/28/2010	423	4/28/2010	4/28/2010	648	0	0	OK	OK	225	Worsen
102	0331NSPSLL00377	4/16/2010	292	4/16/2010	4/16/2010	249	0	0	OK	OK	-43	Ineffective
103	0331NSPSLL00994	4/15/2010	266	4/15/2010	4/15/2010	235	0	0	OK	OK	-31	Ineffective
104	0331NSPSLL01013	4/17/2010	451	4/17/2010	4/17/2010	27	0	0	OK	OK	-424	Effective
105	0331NSPSLL01575	4/6/2010	488	4/6/2010	4/6/2010	439	0	0	OK	OK	-49	Ineffective
106	0331NSPSLL02069	4/13/2010	394	4/13/2010	4/13/2010	131	0	0	OK	OK	-263	Effective
107	0331NSPSLL02667	4/23/2010	382	4/23/2010	4/23/2010	83	0	0	OK	OK	-299	Effective
108	0331NSPSLL02677	4/15/2010	208	4/15/2010	4/15/2010	164	0	0	OK	OK	-44	Effective
109	0331NSPSLL02864	4/15/2010	202	4/15/2010	4/15/2010	133	0	0	OK	OK	-69	Effective
110	0331NSPSLL02870	4/15/2010	291	4/15/2010	4/15/2010	343	0	0	OK	OK	52	Ineffective
111	0331NSPSLL02992	4/15/2010	425	4/15/2010	4/15/2010	359	0	0	OK	OK	-66	Ineffective
112	16223	4/23/2010	390	4/23/2010	4/23/2010	487	0	0	OK	OK	97	Ineffective
113	0338HONLL00274	4/7/2010	479	4/7/2010	4/7/2010	379	0	0	OK	OK	-100	Ineffective
114	0338NSPSLL00104	4/7/2010	433	4/7/2010	4/7/2010	444	0	0	OK	OK	11	Ineffective
115	0103NSPSLL00492	5/4/2010	430	5/4/2010	5/4/2010	136	0	0	OK	OK	-294	Effective
116	0118NSPSGV00160	5/21/2010	297	5/21/2010	5/21/2010	329	0	0	OK	OK	32	Ineffective
117	0118NSPSLL00004	5/19/2010	267	5/19/2010	5/19/2010	60	0	0	OK	OK	-207	Effective
118	0118NSPSLL00024	5/20/2010	267	5/20/2010	5/20/2010	261	0	0	OK	OK	-6	Ineffective
119	0118NSPSLL00429	5/19/2010	214	5/19/2010	5/19/2010	128	0	0	OK	OK	-86	Effective
120	0122HONLL03457	5/9/2010	256	5/9/2010	5/9/2010	228	0	0	OK	OK	-28	Ineffective
121	0123CR1GV00052	5/11/2010	374	5/11/2010	5/11/2010	447	0	0	OK	OK	73	Ineffective
122	0123CR1GV00064	5/11/2010	238	5/11/2010	5/11/2010	138	0	0	OK	OK	-100	Effective
123	0123CR1GV00344	5/10/2010	478	5/10/2010	5/10/2010	164	0	0	OK	OK	-314	Effective
124	0123CR1GV00451	5/13/2010	369	5/13/2010	5/13/2010	374	0	0	OK	OK	5	Ineffective
125	0123CR1GV01017	5/14/2010	229	5/14/2010	5/14/2010	452	0	0	OK	OK	223	Ineffective
126	0123CR1LL00319	5/4/2010	409	5/4/2010	5/4/2010	224	0	0	OK	OK	-185	Ineffective
127	0123CR1LL00452	5/11/2010	230	5/11/2010	5/11/2010	141	0	0	OK	OK	-89	Effective
128	0123CR1LL00829	5/18/2010	484	5/18/2010	5/18/2010	277	0	0	OK	OK	-207	Ineffective
129	0123CR1LL01018	5/13/2010	235	5/13/2010	5/13/2010	194	0	0	OK	OK	-41	Effective
130	0217NSPSGV00129	5/3/2010	372	5/3/2010	5/3/2010	120	0	0	OK	OK	-252	Effective
131	0217NSPSLL00157	5/3/2010	239	5/3/2010	5/3/2010	93	0	0	OK	OK	-146	Effective
132	0217NSPSLL00727	5/3/2010	238	5/3/2010	5/3/2010	57	0	0	OK	OK	-181	Effective
133	0228NSPSLL00134	5/5/2010	245	5/5/2010	5/5/2010	193	0	0	OK	OK	-52	Effective
134	0228NSPSLL00149	5/5/2010	225	5/5/2010	5/5/2010	175	0	0	OK	OK	-50	Effective



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135	0331HONLL00835	5/5/2010	207	5/5/2010	5/5/2010	254	0	0	OK	OK	47	Ineffective
136	0331NSPSGV00129	5/4/2010	374	5/4/2010	5/4/2010	198	0	0	OK	OK	-176	Effective
137	0331NSPSLL01290	5/4/2010	345	5/4/2010	5/4/2010	4	0	0	OK	OK	-341	Effective
138	0334NSPSLL00035	5/25/2010	395	5/25/2010	5/25/2010	447	0	0	OK	OK	52	Ineffective
139	0334NSPSLL00257	5/24/2010	473	5/24/2010	5/24/2010	400	0	0	OK	OK	-73	Ineffective
140	0335NSPSLL00115	5/21/2010	324	5/21/2010	5/21/2010	555	0	0	OK	OK	231	Worsen
141	0430NSPSLL00038	5/12/2010	381	5/12/2010	5/12/2010	147	0	0	OK	OK	-234	Effective
142	16431	5/27/2010	373	5/27/2010	5/27/2010	207	0	0	OK	OK	-166	Ineffective
143	0103NSPSGV00239	6/21/2010	216	6/21/2010	6/21/2010	175	0	0	OK	OK	-41	Effective
144	0103NSPSLL00035	6/17/2010	241	6/17/2010	6/17/2010	182	0	0	OK	OK	-59	Effective
145	0103NSPSLL00072	6/17/2010	431	6/17/2010	6/17/2010	255	0	0	OK	OK	-176	Ineffective
146	0103NSPSLL00133	6/21/2010	357	6/21/2010	6/21/2010	208	0	0	OK	OK	-149	Ineffective
147	0103NSPSLL00351	6/17/2010	375	6/17/2010	6/17/2010	237	0	0	OK	OK	-138	Ineffective
148	0108NSPSGV00061	6/14/2010	308	6/14/2010	6/14/2010	227	0	0	OK	OK	-81	Ineffective
149	120232	6/14/2010	246	6/14/2010	6/14/2010	192	0	0	OK	OK	-54	Effective
150	0112NSPSGV00283	6/9/2010	402	6/9/2010	6/9/2010	493	0	0	OK	OK	91	Ineffective
151	0114NSPSGV00166	6/24/2010	205	6/24/2010	6/24/2010	166	0	0	OK	OK	-39	Effective
152	0114NSPSLL00059	6/24/2010	390	6/24/2010	6/24/2010	117	0	0	OK	OK	-273	Effective
153	0114NSPSLL00112	6/28/2010	274	6/28/2010	6/28/2010	150	0	0	OK	OK	-124	Effective
154	0114NSPSLL00130	6/24/2010	479	6/24/2010	6/24/2010	463	0	0	OK	OK	-16	Ineffective
155	0114NSPSLL00316	6/28/2010	465	6/28/2010	6/28/2010	227	0	0	OK	OK	-238	Ineffective
156	0115NSPSGV00013	6/2/2010	411	6/3/2010	6/3/2010	65	1	1	OK	OK	-346	Effective
157	0120NSPSGV00029	6/4/2010	465	6/4/2010	6/4/2010	152	0	0	OK	OK	-313	Effective
158	0120NSPSGV00416	6/2/2010	250	6/2/2010	6/2/2010	102	0	0	OK	OK	-148	Effective
159	0120NSPSLL00097	6/4/2010	283	6/4/2010	6/4/2010	182	0	0	OK	OK	-101	Effective
160	0120NSPSLL00202	6/8/2010	278	6/8/2010	6/8/2010	123	0	0	OK	OK	-155	Effective
161	0120NSPSLL00205	6/8/2010	441	6/8/2010	6/8/2010	77	0	0	OK	OK	-364	Effective
162	0120NSPSLL01142	6/3/2010	268	6/3/2010	6/3/2010	451	0	0	OK	OK	183	Ineffective
163	0120NSPSLL01227	6/8/2010	237	6/8/2010	6/8/2010	120	0	0	OK	OK	-117	Effective
164	0120NSPSLL01258	6/2/2010	242	6/2/2010	6/2/2010	243	0	0	OK	OK	1	Ineffective
165	0212NSPSLL00111	6/11/2010	398	6/11/2010	6/11/2010	468	0	0	OK	OK	70	Ineffective
166	0331HONLL00588	6/1/2010	324	6/1/2010	6/1/2010	222	0	0	OK	OK	-102	Ineffective
167	0331HONLL00806	6/1/2010	204	6/1/2010	6/1/2010	480	0	0	OK	OK	276	Ineffective
168	0331HONLL00839	6/1/2010	471	6/1/2010	6/1/2010	439	0	0	OK	OK	-32	Ineffective
169	0331NSPSGV00275	6/2/2010	377	6/2/2010	6/2/2010	326	0	0	OK	OK	-51	Ineffective

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No.	Tag Number	Initial Reading		Initial Repair Attempt	Post Attempt Reading		Repair	Remonitor	Repair	Remonitor	Post -	Category
		Date	PPM	Date	Date	PPM	Date Gap	Date Gap	Timeliness (OK if ≤ 5)	Timeliness (OK if ≤ 5)	Initial Reading	
170	0331NSPSLL01235	6/8/2010	361	6/8/2010	6/8/2010	421	0	0	OK	OK	60	Ineffective
171	0331NSPSLL01549	6/2/2010	400	6/3/2010	6/3/2010	387	1	1	OK	OK	-13	Ineffective
172	0331NSPSLL01663	6/9/2010	416	6/9/2010	6/9/2010	1481	0	0	OK	OK	1065	Worsen
173	0331NSPSLL02120	6/1/2010	209	6/1/2010	6/1/2010	415	0	0	OK	OK	206	Ineffective

**ATTACHMENT 9, Appendix E**  
**Internal Leak Definitioin Repair Information**  
**[130(b)(ix)]**

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**Pumps (in light liquid service) and Valves (in light liquid and/or gas vapor service, and other than pressure relief devices) with no intial repair attempt and/or re-monitoring and at Internal Leak Threshold within 5 days**

Compliance Group	Tag	Class	Date Reported	First Attempt Due Date	Initial Repair Date	Initial Retest Date	Issue	Note
No Pumps (in light liquid service) and Valves (in light liquid and/or gas vapor service, and other than pressure relief devices) leaking at the Internal Leak Threshold had no intial repair attempt and/or re-monitoring within 5 days								

**Pumps (in light liquid service) and Valves (in light liquid and/or gas-vapor service, and other than pressure relief devices) leaking above internal threshold not repaired within 30 days or placed on Delay of Repair List**

Compliance Group	Tag	Class	Date Reported	Effective Repair Due Date	Actual Repair Date		Issue	Note
No Pumps (in light liquid service) and Valves (in light liquid and/or gas-vapor service, and other than pressure relief devices) leaking above Internal Leak Threshold were not, within 30 days, repaired or placed on the Delay of Repair list or removed from service.								

**ATTACHMENT 9. Apppendix F**  
**LDAR Audit Findings, Corrective Actions, and Status**  
**[118]**

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**3rd Party LDAR Audit Issues**

No LDAR Audit was conducted during the reporting period. The prior Audit was conducted in July 2009, and its corrective actions are complete. Thus no information is included in this report

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**Attachment 10**

**Mass Emission Data**



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**Emission Summary for Units Affected by Consent Decree**  
Jan-2010 through Jun-2010

	Tons/month						Total tons (6-mo)
	Jan-10	Feb-10	Mar-10	Apr-10	May-10	Jun-10	
FCCU							
CO	14.50	12.66	15.85	11.95	16.91	16.17	88.04
NOx	13.97	8.15	12.94	10.35	7.21	11.11	63.75
SO2	13.22	10.95	10.70	9.08	7.96	5.09	57.00
SRUs (SO2)							
119A-train	3.34	4.68	3.65	4.32	6.42	2.69	25.11
119 B-train	1.69	1.56	1.77	10.29	3.54	5.60	24.44
121 C-train	2.85	3.80	3.39	2.65	5.10	6.31	24.10
121 D-train	1.16	0.33	1.13	0.91	1.59	1.70	6.83
Total	9.04	10.37	9.93	18.17	16.66	16.30	80.48
Process Heaters (SO2)							
102 B-2	0.01	0.01	0.01	0.01	0.03	0.03	0.10
103 B-1	0.03	0.02	0.03	0.02	0.04	0.05	0.17
106 B-1	0.07	0.06	0.09	0.06	0.04	0.06	0.39
107 B-21	0.00	0.00	0.00	0.00	0.00	0.00	0.00
108 B-41	0.07	0.05	0.09	0.04	0.03	0.04	0.32
108 B-42	0.00	0.00	0.00	0.00	0.00	0.00	0.02
109 B-62	0.10	0.08	0.39	0.09	0.10	0.12	0.88
111 B-1A	0.66	0.51	0.70	0.56	0.84	1.06	4.33
111 B-1B	0.65	0.50	0.71	0.57	0.85	1.06	4.33
111 B-2	0.39	0.29	0.35	0.29	0.47	0.53	2.32
113 B-1	0.21	0.16	0.20	0.15	0.24	0.29	1.25
113 B-2	0.21	0.16	0.19	0.15	0.24	0.29	1.26
113 B-3	0.20	0.15	0.18	0.16	0.22	0.27	1.19
114 B-1	0.04	0.03	0.03	0.04	0.04	0.04	0.21
114 B-2	0.04	0.03	0.03	0.03	0.05	0.05	0.22
114 B-3	0.04	0.03	0.02	0.03	0.04	0.06	0.23
115 B-1	0.08	0.04	0.07	0.04	0.05	0.07	0.35
115 B-2	0.07	0.05	0.07	0.04	0.06	0.08	0.38
116 B-1	0.15	0.12	0.11	0.13	0.15	0.19	0.86
116 B-2	0.08	0.06	0.05	0.06	0.08	0.09	0.43
116 B-3	0.04	0.03	0.03	0.01	0.02	0.03	0.17
116 B-4	0.02	0.02	0.01	0.02	0.04	0.04	0.15
118 B-1	0.12	0.10	0.12	0.07	0.14	0.18	0.72
118 B-51	0.01	0.01	0.01	0.01	0.01	0.02	0.07
122 B-1	0.01	0.01	0.01	0.00	0.01	0.01	0.05
122 B-2	0.01	0.00	0.01	0.01	0.01	0.01	0.04
123 B-1	0.04	0.04	0.06	0.04	0.08	0.09	0.36
123 B-2	0.32	0.26	0.35	0.25	0.38	0.42	1.99
123 B-3	0.11	0.09	0.11	0.08	0.12	0.13	0.64
123 B-4	0.09	0.07	0.09	0.06	0.10	0.11	0.52
123 B-5	0.14	0.10	0.14	0.08	0.11	0.10	0.67
125 B-1	0.18	0.15	0.26	0.08	0.11	0.09	0.86
125 B-2	0.24	0.16	0.21	0.09	0.26	0.27	1.22
430 B-1	0.81	0.65	0.67	0.59	0.78	0.58	4.09
431 B-20	0.01	0.02	0.02	0.01	0.02	0.03	0.11
Total	5.22	4.08	5.44	3.89	5.77	6.51	30.91

Attachment 10.  
Semi-Annual Emissions Data  
144.b.

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Jan-2010 through Jun-2010

	Tons/month						Total tons (6-mo)
	Jan-10	Feb-10	Mar-10	Apr-10	May-10	Jun-10	
Process Heaters (NOx)							
111B-1A	3.72	3.00	3.55	3.55	3.75	3.99	21.56
111B-1B	3.23	2.79	3.93	3.64	3.84	3.73	21.16
111B-2	1.11	0.83	1.07	1.29	1.55	1.10	6.96
430B-1	7.06	6.43	6.45	5.46	4.97	2.97	33.34
431B-20	4.43	3.90	3.73	1.85	3.06	2.79	19.75
Total	19.55	16.93	18.74	15.79	17.17	14.59	102.78